

WINGATE'S PHANTOM ARMY

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BY

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PRONUNCIATION

The pronunciation of titles is indicated by accenting the word or by respelling it phonetically in italics. In the phonetic spelling, letters are used to indicate the sounds which they most commonly represent.

A vowel is *short* when followed by a consonant in the same syllable, unless the syllable ends in silent e.

A vowel is *long* when standing alone or in a syllable which ends in silent e or when ending an accented syllable.

S is always soft, and never has the sound of z.

The foreign sounds which have no equivalent in the English language are represented as follows:

K for the German *ch*, as in Bach: (Bach, *baK*).

N for the French *n*, as in Breton: (Breton, *bre toN*).

ö for the German *o*, as in Gothenburg: (Gottingen, *go'ting en*).

ü for the German *u*, as in Blucher: (Blücher, *blaK'ur*).

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CHICAGO

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CHRONOLOGY, *krō nō'lō jē*, the science which treats of time, and has for its object the arrangement and exhibition of historical events in order of time, and the ascertaining of the intervals between them. Its basis is necessarily the method of measuring or computing time by regular divisions or periods, according to the revolutions of the earth or moon. The motions of these bodies produce the natural division of time into years, months and days.

As there can be no exact computation of time or placing of events without a fixed point from which to start, dates are fixed from an arbitrary point, or *epoch*, which forms the beginning of an *era*. Thus, the epoch almost universally in use to-day, as the point from which all events are dated, is the birth of Christ. The letters B. C. and A. D. (*Anno Domini*, in the year of our Lord) are used to designate respectively dates before and after the birth of Christ. Among the Greeks time was reckoned by Olympiads, the four-year intervals between successive games, and the beginning of their era was approximately 776 b. c. The Romans calculated from the time of the founding of Rome, 753 b. c., and the Mohammedans from the flight of Mohammed (see HIGIHA).

CHRONUS, also spelled Cronus, in mythology was the father of Demeter, Hades, He-tin, Hera, and Po-eidón, whom he swallowed at birth. Rhea was his wife. When Zeus was born, Rhea's scheme saved him.

CHRONOMETER, *krō nom'ē tēr*, an instrument for measuring time, the name not applied, however, to the ordinary watch or clock. It is a portable timepiece, intended to mark time with great accuracy, and made to beat at half-second intervals. Chronometers are used in astronomical observations and in determining longitudes at sea.

CHRYSPALIS, *kris'palēs*, an intermediate form which butterflies assume after they cease to be larvae and before they reach their winged, or perfect, state. While in the chrysalid state, the animal is resting in apparent insensibility, entirely without food, though it continues to breathe. The chrysalis in most cases is protected from observation by its color, which closely resembles the object to which it is attached. In the case of moths the larva weaves around itself a cocoon, in which the change to the pupa stage takes place. See BUTTERFLY.

CHYSANTHEMUM, *kris an'the mūm*, a

group of plants resembling the asters, comprising herbs and shrubs, and bearing large heads of flowers on the ends of the stems or branches. Two species are common weeds in Great Britain: the *ox-eye daisy*, a meadow plant with white ray flowers, and the *corn marigold*, a weed with golden-yellow ray flowers. The former is now very common in the United States and Canada. The gorgeous chrysanthemums of the gardens are varieties of Chinese and Japanese plants. These are extensively cultivated in the hot-houses of most countries and are remarkable for the great variety of form and the brilliancy of color which they show during the period of their autumn blooming. The chrysanthemum is the national flower of Japan, and the open variety with sixteen ray flowers is the imperial emblem.

CHYSOBERYL, *kris'o ber'ēl*, a variety of beryl that occurs in six-sided crystals which are sometimes compressed. It contains considerable alumina, has a glassy luster and is of various shades of green. Occasional specimens appear red when held between the eye and the light. One variety forms the gem called *cat's-eye*, and other varieties suitable for gems are occasionally found, but most specimens are of inferior quality. Chrysoberyl was known to the ancients as oriental topaz and oriental chrysolite. It is found in Ceylon, the Ural Mountains and Brazil, and in the United States at Haddam, Conn., and at various localities in Maine.

CHYSOLITE, *kris'o lītē*, a mineral composed of silica, magnesium and iron. Its prevailing color is some shade of green. It is harder than glass, but is less hard than quartz, it is often transparent, sometimes only translucent. Very fine specimens are found in Egypt and Brazil, and it occurs in large quantities in North Carolina. Gem varieties are known as *olivine* and *peridot*.

CHYSOPRASE, *kris'o prāsē*, a stone found in small quantities in Germany and some parts of America, formerly much prized as a gem. It is apple-green in color, but under the influence of heat it loses its brilliance and is therefore not much used. It is mentioned in the Bible, and was probably known to the ancients.

CHYSOSTOM, JOHN (about 345-407), a Syrian and one of the early Christian fathers. His zeal led him to assail worldliness so strenuously in Constantinople that banishment followed, on the way to which he died.

CHUB, a river fish of the carp family, also known as *dace*. The body is oblong, nearly round, and the head is broad. The head and back are green, the sides are silvery and the belly is white. This fish frequents deep holes in rivers shaded by trees, but in warm weather floats near the surface and furnishes sport for anglers. It is of little account as food and rarely attains the weight of five pounds. See *DACE*.

CHURCH, a word which in its widest sense denotes the whole community of Christians and was thus used by the New Testament writers. In a more restricted meaning, it denotes a particular section of the Christian community, differing in doctrinal matters from the remainder, as the Roman Catholic Church, the Protestant Church, or the leading church of a nation, as the English, Scotch or French Church. In yet another sense, it signifies an edifice appropriated to Christian worship. After the conversion of Constantine, the basilicas or public halls and courts of judicature and some of the heathen temples were consecrated as Christian churches. When churches came to be specially built for Christian worship, the forms were various, but later the form with the cross aisle or transept became common. Churches are classed as *cathedral*, when containing a bishop's throne; *collegiate*, when served by a dean and chapter; *conventual* or *minster*, when connected with a convent or monastery; *abbey* or *priory*, when under an abbot or prior, and *parochial*, when the charge of a secular priest.

CHURCH, FREDERICK EDWIN (1826-1900), an American artist born in Hartford, Conn. He went to New York and in 1849 was elected a member of the National Academy. In 1853-1857 he traveled in South America. Later he went on an expedition to the coast of Labrador and on his return painted his great picture, *Icebergs*. Church traveled through the West Indies, Europe and Palestine in 1866. His best work was the *Great Fall at Niagara*; other works are *Damascus*, *Jerusalem* and *The Parthenon*. His pictures are mostly pictorial, and they abound in details, to a fault, but they show care and skill.

CHURCHILL, WINSTON (1871-), an American novelist whose books, dealing with purely American subjects, are often counted among the "best sellers." He was born in Saint Louis and educated at the United States

Naval Academy at Annapolis. Churchill was for a time editor of the *Army and Navy Journal*, and in 1895

he became managing editor of the *Cosmopolitan Magazine*.

After contributing short stories to leading magazines, he gained wide popularity through his trilogy of historical novels, *Richard Carvel*, *The Crisis* and *WINSTON CHURCHILL The Crossing*. In

Mr. Crewe's Career and in *Coniston* he portrayed contemporary political life in New England, and in *The Inside of the Cup* he dealt with the relation of religion to social problems. Later works were *The Traveller in War-Time* and *Dwelling Place of Light*.

CHURCHILL, WINSTON LEONARD SPENCER (1874-), an English statesman, soldier and author, son of the late Lord Randolph Churchill. He entered the army in 1895 and served in India, and then in Egypt. He took part in the Battle of Khartum where he won a medal for gallant conduct. After serving during the Boer War as correspondent for the *London Morning Post*, he was elected to the House of Commons in 1900 as a Conservative. Having become a member of the Liberal party, he was appointed Under Secretary of State for the Colonies, holding that office from 1905 to 1907. From 1908 to 1910 he was President of the Board of Trade; from 1910 to 1912, Home Secretary; in 1912 he was appointed First Lord of the Admiralty in the Asquith Ministry, being one of the youngest men who ever held that post. In 1913 Churchill made his sensational proposal to Germany in regard to a "naval holiday." His plan was to have England and Germany cease from adding to their respective navies for one year, but before any action was decided upon all such plans were overturned by the outbreak of the World war.

Churchill threw himself wholeheartedly into the struggle, but his conduct of naval affairs was much criticized, and in 1915 he was relieved of his office. For a brief period he held the unimportant position of Chancellor of the Duchy of Lancaster, but England later recognized its need of a man of his ability, and in 1917, when the Lloyd George Cabinet was reorganized, Churchill



was appointed Minister of Munitions. Churchill was reelected to Parliament in the general election of December, 1918, and when the new Cabinet was organized in January, 1919, he was made Secretary of the War Department, with which was combined the Air Ministry. In 1926, he became Chancellor of the Exchequer in the Conservative Government.

He has written *The River War, London to Ladysmith via Pretoria, My African Journey* and a biography of his father.

CHURCHILL, MAN., a port on Hudson Bay, the terminus of the Hudson Bay branch of the Canadian National Railway. The Government has constructed docks and a large elevator. Shipments of wheat from the Western Provinces direct to Europe via Hudson Bay began in 1931. Churchill River, which empties into Hudson Bay at this point, is the most important river in Manitoba. It rises in western Alberta and passes through various lakes or lake-like expansions—the largest being Southern Indian Lake—on its course of more than 1,000 miles.

CHURCH OF ENGLAND. See ENGLAND, CHURCH OF.

CHURN, a vessel used for making butter. An early and simple pattern was shaped like the lower part of a cone. A plunger operated through a hole in the cover stirred the cream within until the butter was separated from the buttermilk. Churns of a later pattern are now in general use and these secure the desired result by rotary motion. In creameries large churns operated by power are in use. See BUTTER; CREAMERY.

CHURUBUSCO, choo roo boos'ko, BATTLE OF, a battle of the Mexican War (which see), fought near the city of Mexico, August 20, 1847, between 18,000 Americans under General Taylor and 25,000 Mexicans under Santa Anna. The fighting was severe throughout one day, the Americans being at one time threatened with defeat, but a determined counter-attack won an advantageous position, from which the Americans compelled the surrender of the fortress. The Mexicans retreated to the City of Mexico.

CHYLE, kile, an opaque, milky fluid, found in the small intestine during digestion. It is formed by the action of the intestinal juices, bile and pancreatic juice, on chyme. These juices, being alkaline in character, neutralize the acidity of the gastric juice.

Chyle contains the nutritive portion of the food, which is absorbed by the villi of the intestines and carried by the lacteals of the thoracic duct.

Related Articles. Consult the following titles for additional information.

Chyle	Lacteals	Thoracic Duct
Digestion	Lymph	Stomach

CHYME, *kīmē*, a thick grayish-white substance formed by the action of gastric juice on food in the stomach. The walls of the stomach contract in such a way as to churn the masticated food and mix it thoroughly with the gastric juice, and the resulting chyme passes into the small intestine to be changed into a fluid called chyle (which see).

CICADA, si lay'da, more commonly called LOCUST and HARVEST FLY, a large insect, in size varying in spread of wings from one inch to four inches. Doubtless the cicadas (Latin, *cicadidae*) are the noisiest insects in the world, but only the males can be charged with disturbing the peace; the females are silent. The males have a long, shrill note, produced by vibrating membranes of special sound organs located on the under side of the abdomen.

The females lay their eggs in the twigs of trees or shrubs, from which the young drop to the ground soon after they are hatched. The long life they live underground is not well understood, but finally the pupa crawls out upon the trunk of a tree or a spear of grass, its skin splits open along the back, and the full-grown insect emerges. At first the wings are merely watery sacs, but in a very short time they expand to their full size.

The most remarkable of the cicadas, and according to the United States Department of Agriculture "the most interesting insect in the world," is the so-called *seventeen-year locust*, whose larvae spend either thirteen or seventeen years under ground, lacking a few weeks, in slow development. Then millions of individuals attain maturity almost at the same moment and emerge for a noisy and strenuous existence above ground, terminating in exhaustion and death after about five weeks. During that period the females lay their eggs by chiseling grooves in the small branches of trees. The larvae reach the



ground and in the soil disappear for their long sleep.

During their short life above ground, during the months of May and June, they have been known to do incalculable damage to crops, often destroying with remarkable completeness within a few hours all growing grain over a wide area. While pursuing their existence long years underground, where they frequently burrow to a depth of several feet, they subsist on the juice of tender tree-roots and on nourishment extracted from the soil.

CICELY, *sis'e ly*, a popular name applied to several plants of the parsley family. Sweet cicely, or sweet chervil, is a plant common in Great Britain and other parts of Europe. It was formerly used in medicine, and in some parts of Europe, particularly Germany, it is used in soups. A species of sweet cicely is found in American woods from Canada to Virginia.

CICERO, *sis'e ro* (106-43 B. C.), the greatest orator among the Romans, who lived in the stirring period of the declining republic. At one time hailed as the "savior of Rome," his eloquence later caused his banishment and finally his death by beheading.

His father was a friend of some of the leading public men, and Cicero was assisted to the best education available. At the age of twenty-five he came forward as a pleader, and he soon won a most favorable reputation. In 79 B. C. he visited Greece and profited by the instruction of the masters of oratory. He also made a tour in Asia Minor and remained some time at Rhodes, where he visited the most distinguished orators and took part in their exercises.

On his return to Rome his eloquence proved the value of his Greek instruction, and he became one of the most distinguished orators in the forum. In 76 he was appointed quaestor of Sicily, and he behaved with such justice that the Sicilians gratefully remembered him and requested that he conduct their suit against their governor, Verres. He appeared against this powerful robber, and although only two of the seven Verrine orations were delivered, Verres went into voluntary exile. After this suit Cicero rose rapidly in public life, becoming consul in the year 63. It was then that he succeeded in defeating the conspiracy of Cataline, after whose fall he received greater honors than had ever before been bestowed upon a Roman

citizen. He was hailed as the father of his country, and thanksgivings in his name were voted to the gods.

But Cicero's fortune had reached the culminating point. The conspirators who had been executed had not been sentenced according to law, and Cicero, as chief magistrate, was responsible for the irregularity. Publius Clodius, the tribune of the people, raised such a storm against him that he was obliged to go into exile. On the fall of the Clodian faction he was recalled to Rome, but he never succeeded in regaining the influence he had once possessed.

In 52 B. C. he became proconsul of Cilicia, a province which he administered with eminent success. As soon as his term of office had expired he returned to Rome, which was threatened with serious disturbances, owing to the rupture between Caesar and Pompey. He espoused the cause of Pompey, but after the Battle of Pharsalia he made his peace with Caesar, with whom he continued to all appearance friendly and by whom he was kindly treated.

After the assassination of Caesar he hoped to regain his political influence. He allied himself with Octavianus and composed those admirable orations against Antony which are known as *Philippics* (after the speeches of Demosthenes against Philip of Macedon). Octavianus professed to entertain the most friendly feeling toward him, but when he had possessed himself of the consulate and formed an alliance with Antony and Lepidus, Cicero was proscribed. In endeavoring to escape from Tusculum, where he was living when the news of the proscription arrived, he was overtaken and beheaded by a party of soldiers.

Cicero's eloquence has always remained a model. After the revival of learning he was the most admired of the ancient writers, and the purity and elegance of his style will always place his works in the first rank of Roman classics. Students of Latin in high schools read Cicero in the third year of the Latin course. See **ROME**, subhead *History*.

CID, *sid*, *Ths*, a name applied to Ruy or Rodrigo Diaz, count of Bivar (1026?-1099), the national hero of Spain. He distinguished himself by his exploits in the reigns of Ferdinand, Sancho and Alfonso VI of Leon and Castile. His life appears to have been entirely spent in fierce warfare with the Moors, then masters of a great part of

Spain His sword, banner and drinking cup are supposed still to be in existence and are greatly reverenced by the Spanish people. Numerous romances in which history was mingled with the wildest fables were written about him during the sixteenth and seventeenth centuries, and he is the hero of a famous tragedy (*Le Cid*) by *Cornelio*.

CIDER, *sī'dur*, a liquor made from the juice of apples. The apples are ground and crushed until they are reduced to a pulp, the juice is allowed to run into casks, where it is freely exposed to the air until partial fermentation takes place, when a clear liquor of a pale brown or amber color is the result. Unfermented cider is extensively used as a beverage, and it is also boiled to the consistency of sirup and used in cooking.

CIENFUEGOS, *the ēn fü'gōs*, the second city of Cuba in size, a seaport on the southern coast, 130 miles southeast of Havana, with which it is connected by railway. It has a safe and capacious harbor on the Bay of Jagua. It is among the finest towns of Cuba and exports sugar, wax and timber products. Population, 1933, 57,970.

CIGAR, a cylindrical roll of dried tobacco leaves, from four to six inches in length, tightly packed, tipped at one end, and used for smoking. The outer leaf, larger than the others, is called the wrapper. The most popular tobacco filler for cigars is called Havana, because grown in Cuba and shipped from the port of Havana. The wrapper may be of Havana tobacco or may be of domestic quality (grown in the United States) or imported from Porto Rico or Sumatra; also both wrapper and filler may be of Havana, or of domestic or foreign growth.

The output of cigars is more stationary than that of cigarettes, averaging during a fifteen-year period in the United States between 5,000,000,000 and 7,000,000,000 per year, according to internal revenue reports (there is a tax on all tobacco products). Cigarettes are displacing cigars in popularity, as is indicated by the constantly increasing consumption of the former (see CIGAR-ETTE). The largest number of cigars on which the tax was paid in any one year was 7,822,530,618 (1921); the smallest number since then was 4,763,883,947 (1935).

The most important cigar-manufacturing center in the United States is Tampa, Fla.; New York City is second.

Cigars were first made in the Spanish

West Indies; for this reason the Spanish language leads yet in popularity for names of cigars.

CIGARETTE, a small cylindrical roll of tobacco, encased in rice paper wrapper, used for smoking. The common size is two and three-quarter inches in length, more expensive qualities and lengths reach four and five inches. Probably no other commodity of questionable value has ever gained the success that has attended the cigarette. For many years its manufacturers contended with the well-organized opposition of sincere reformers, but these of late have desisted from their efforts in large measure, for they recognize that they face an almost hopeless task in establishing in the public mind a prejudice against the cigarette. The society that promoted the agitation was incorporated as the Anti-Cigarette League of America, and it was active for more than thirty years, its present-day successor is the Boys' and Girls' Anti-Cigarette League, world-wide, but with declining influence.

Opposition to the cigarette appeared to be accomplishing results until the years of the World War, when soldiers of all countries in camps and trenches found them available in great quantities and declared that nothing else they could purchase soothed shattered nervous forces so completely. Be that as it may, millions of young men returned home after the war with the cigarette habit firmly fixed. Figures attest the truth of the above statement. In the year 1921 manufacturers paid taxes on an output of 45,065,323,000 cigarettes in the United States, the largest number ever made up to that time in any year. The year of greatest production since then was 1934, when 212,781,000,000 were made. The depression years forced consumption down from former high peaks, but in no year there were fewer than 114,000,000,000 sold.

To protect children from the injurious effects of cigarette-smoking, about a dozen states of the American Union prohibit sale to minors.

CILIA, *sil'e a*, small, generally microscopic, hairlike projections found on the inner surface of some organs of the body. They are found in the nasal passages, except where the olfactory nerve is distributed, on the upper surface of the soft palate, in the Eustachian tube and the tympanum, in the larynx, except over the vocal cords, and in every tiny

division of the bronchi. These cilia have a constant rapid motion, which produces a continuous current always in the same direction on the same surface. See BRONCHI, LUNGS.

CIMBRI, *sim'bri*, a warlike tribe of ancient Europe, who, with the Teutons, began the great Germanic migration southward into Roman territory. The movement began in the year 113 B. C. After several years of wandering, and meeting and defeating a Roman army, they entered Gaul, where they were joined by the Teutons. Together they moved toward Italy. But the Roman legions, under their great general Marius, in two decisive battles, at Aix (102 B. C.) and at Verceil (101 B. C.), utterly defeated them.

CIMMERIANS, *sim'me'ri'ans*, a semi-mythical tribe that once lived in a region "not visited by the sun." From this statement the phrase "Cimmerian gloom" originated. This tribe is mentioned by Homer in the *Odyssey*. Herodotus says that they inhabited the Crimea in southern Russia and were driven out by the Scythians. They came finally into a district west of the Halys River in Asia Minor, where they ravage the country, in the seventh century, B. C.

CINCHONA, *sin'ko'na*, an important genus of plants belonging to the madder



CINCHONA

family. They are trees, shrubs or herbaceous plants, with simple, opposite leaves. The fruit is dry. The plants are found almost exclusively in the tropics, and many of the

species are of great medicinal importance; from one of them quinine is produced. The bark is taken off in strips, longitudinally; it is in time renewed by natural growth. Cinchona plants have been taken from Peru, their native home, and they are now cultivated in large plantations in Ceylon, India, Java and other tropical countries. See QUININE, PERUVIAN BARK



Tyler-Davidson Monument

CINCINNATI, *sin'sin'nat'i*: OHIO, the county seat of Hamilton County and the largest city on the Ohio River below Pittsburgh. The city is 263 miles southwest of Cleveland, and 270 miles southeast of Chicago. New York City is 764 miles northeast. Until a few years after 1890 it was the largest city in the state. Its suburbs have grown rapidly, and within an hour's ride from the center of the city there live more than a million people.

The 1920 census gave Cincinnati 401,247 people, and that of 1930 increased the number to 451,160, a gain of over twelve per cent in ten years.

Cincinnati lies along the north bank of the Ohio River, opposite the mouth of Licking River; the low land near the water gradually slopes upward for a short distance; there is then a large area of level ground, upon which the business section is built, back of this to the north rise hills of beauty, where the people have built thousands of fine homes. Low water mark at the river is 432 feet above sea level; the hills rise from 420 feet to 525 feet above this low water level.

Commerce and Transportation. Cincinnati has eight railroads of importance. Into the Union Terminal near the river converges the passenger traffic of the Cleveland, Cincinnati, Chicago & Saint Louis, the Chesapeake & Ohio, the Cincinnati Southern, the Baltimore & Ohio and the Louisville & Nashville. The principal lines having separate stations are the Pennsylvania Lines, the Baltimore & Ohio and the Cincinnati, Lebanon and Northern. The Cincinnati Southern, 338 miles in length and operated under lease into the South by the Southern Railway, is owned by the city.

The Ohio River is a great avenue of commerce; boats ply between Cincinnati and all important river ports from Pittsburgh to New Orleans. Electric railways connect the city with all the neighboring suburban districts, and also with the cities and villages on the Kentucky side of the river. Here converge the Atlantic-Pacific Highway and the Dixie Highway, and others of less importance. The municipal and five other airports render complete air service.

There are more than 2,200 industrial establishments in the city and suburbs, which produce manufactures to the value of nearly \$7,000,000 every week. Almost every article known to trade is made, and Cincinnati also has industries found in few other cities. In this latter class is the famous Rookwood pottery works in the northwestern part of the town. The best-advertised soap made in America is a Cincinnati product, the leading playing-card factory in the world is here, as is the main factory of the greatest sectional bookcase company.

Streets and Buildings. Cincinnati boasts the tallest building between New York City and Seattle, in the forty-five story Carew Tower, visible for miles in all directions. The Federal building, erected at a cost of \$5,000,000, is in the location of the custom house, Federal courts and United States officials for the local district. The Union Terminal, costing \$41,000,000, is a unique and beautiful structure. Other buildings of note are the Hamilton County Court House, post office, the city hall, tuberculosis and contagious disease hospitals, and the House of Refuge for wayward boys and girls.

Many fine hotels have been built in recent years, and the city is well supplied with clubs. Of churches, the most pretentious is probably Saint Peter's Roman Catholic Cathedral, with a spire 224 feet high. Saint Paul's Methodist Church, two Presbyterian churches, and the Jewish Synagogue are notable buildings.

The intersection of Fifth and Vine streets may be considered as being in the heart of the retail business section. The city hall is six blocks north and west, the post office is one block east. The finest public work of art in the city is the Tyler-Davidson Fountain, in Fountain Square. This is of bronze and was cast in the royal foundry of Munich at a cost of \$200,000. The city also has an equestrian statue of President William Henry Harrison and statues of Garfield and

Lincoln, and in Spring Grove Cemetery is a magnificent bronze statue erected in memory of the soldiers who fell in the Civil War.

Bridges. There is a large suspension bridge between the city and Covington, on the Kentucky side of the river, built in 1867 at a cost of \$1,800,000 and reconstructed in part just before 1900 at a cost of \$500,000. It is 2,763 feet long, is 106 feet above low-water mark, and has a central span of 1,057 feet. Two iron bridges connect the city with Newport, Ky., which lies along the river east of Covington, one is called Central bridge, and across the other runs the Louisville & Nashville Railroad. The Chesapeake & Ohio and the Cincinnati Southern cross into Kentucky on bridges farther west.

The Park System. Much attention has been given to the adornment of the city by developing the existing park system. In 1907 a comprehensive plan for parks was adopted, new areas were purchased and parked, and now Cincinnati has over 3,400 acres in public parks. The largest is Mount Airy Forest, 1,100 acres; Ault Park has 205 acres; Burnet Woods, 170 acres, Victory Parkway, 84, Mount Storm, 67; Mount Echo, 51, and Parker's Woods, 35 acres, Alms Park, 65 acres; Eden Park, 210 acres.

Education and the Arts. Cincinnati is one of the few cities of the world that offers education under municipal control from the kindergarten through the university. The University of Cincinnati (see CINCINNATI, UNIVERSITY OF) is owned by the city, its buildings are in Burnet Woods. One of the foremost Jewish institutions in the United States is Hebrew Union College, the Roman Catholics have two important schools in Saint Joseph's and Saint Xavier's colleges. The Mechanic's Institute is a strong technical institution. The women of the city founded the Art Museum and Art School, which has several large buildings. In music, Cincinnati stands preeminent. Its Symphony Orchestra has an international reputation. The Conservatory of Music and the College of Music have a high standing. Entertainment by radio is afforded by five broadcasting stations in the Cincinnati metropolitan area, the WLW 500,000-watt station being the most powerful in the country. The Cincinnati Zoological Gardens, with barless cages, is one of the oldest and finest. The Museum of Natural History has a remarkable collection of relics of the Mound Builders (which see).

Historical. The site of the city of Cincinnati was first visited by George Rogers Clark in 1780, the first settlement was made in 1788, and the following year Fort Washington was built. In 1790 Hamilton County was organized, and Cincinnati became the county seat. At this time it was given its present name by General Saint Clair, in honor of the Society of the Cincinnati (See *CINCINNATI, SOCIETY OF THE*). In 1802 it was incorporated as a town, and in 1819 it was organized into a city. The city continued to increase in importance and population. The city has suffered from frequent floods, which have caused much damage in the portion of the town next the river. The last flood was in 1913. In 1911 the movable Fernbank Dam, the largest in the world at the time, was completed; it is adding much to the commercial importance of the city.

The city is governed on the city-manager plan, the city manager being selected by the city council.

CINCINNATI, SOCIETY OF THE, a patriotic society organized by George Washington and his officers in the Continental army, while at Fishkill, on the Hudson River, May 13, 1783. Membership in the society was accorded to all Continental officers who had served three years or who had been honorably discharged, and also to the eldest male descendants of such officers. The society had thirteen branches, one in each of the original thirteen commonwealths, and its first meeting was held at Philadelphia in May, 1784. Washington was the first president of the society; Alexander Hamilton, the second. Owing to serious opposition to the purposes and methods of the organization, which were believed by many persons to be subversive of the principles of democracy upon which the new republic was organized, the Society of the Cincinnati soon declined in influence, and for many years after about 1830 it was practically dormant. In 1893, however, a revival began. Its hereditary living members number about 1,000.

CINCINNATI, UNIVERSITY OF, an institution of higher learning at Cincinnati, Ohio, founded on bequests made by Charles McMicken in 1858, and by grants made subsequently by the city. It is strictly a municipal university, and is under the exclusive control of the city of Cincinnati. The university was open for instruction in 1873. At present it comprises the following depart-

ments: the colleges of liberal arts, engineering, law and medicine, a teachers' college, a graduate department and a technical school. The Clinical and Pathological School of the Cincinnati Hospital and the Ohio College of Dental Surgery are affiliated with the university. The faculty numbers more than 600, and the student enrollment normally is nearly 10,000. There is a library of over 100,000 volumes. Close connection is maintained between the city departments and the university, especially in the fields of engineering, chemistry and civics.

CINCINNATUS, *sin'sin'at'us, lu'ci'us* Quintius, a wealthy patrician of the early days of the Roman Republic. He violently opposed, during his consulship, the passage of the law for the equalization of law of patricians and plebeians. When, in 458 B. C., Minucius, the consul, was surrounded by the Aequins, the messengers of the Senate found Cincinnatus at work on his farm when they came to summon him to the dictatorship. He rescued the army from its peril, marched to Rome laden with spoil and then returned quietly to his farm. At the age of eighty he was again appointed dictator, to oppose the ambitious designs of Spurius Maelius.

“Cincinnatus of the West.” George Washington was honored with this title, it having first been applied to him by Lord Byron.

CINDERELLA, *sin'der'el'a*, the title of one of the oldest and best-loved fairy tales. Cinderella, the heroine, who was ill treated by an unkind stepmother and two envious stepsisters, earned her name because she had to sit among the cinders in the chimney corner. When the prince of the kingdom gave a wonderful ball, good fortune came to her, for her fairy godmother, in the guise of a witch, changed her ragged dress into a beautiful gown, and out of a pumpkin and raters she created a splendid coach, with horses and coachman. With this beautiful equipment she attended the ball.

In the ballroom Cinderella lost her glass slipper, which the prince secured. At last he identified her with it, and they were happily married. Plays and operas have been based on this old tale, which has never lost its charm for young or old. A version of the story was known to the ancient Egyptians and to the Greeks. The English versions were adapted from the story as written by Charles Perrault, a French writer.

CINERARIA, *sin'erä're ah*, a genus of plants consisting of herbs or small shrubs, with small-sized heads of flowers. They were first found in South Africa. The name is derived from the lower leaves, which are of ashy appearance. A number of species are cultivated for garden purposes, and from these an almost endless variety of blossoms of many different colors have been evolved. They are a favorite hothouse plant. Purple, red, and purple and white are the prevailing colors of these popular aster-like flowers.

CINNA, *sin'na*, LUCIUS CORNELIUS, an eminent Roman, a follower of Marius. Obtaining the consulship in 87 B. C., after the expulsion of Marius from Rome, he impeached Sulla and endeavored to secure the recall of Marius. Driven from the city, he joined Marius and soon gained possession of Rome. The friends of Sulla were massacred, and Cinna and Marius made themselves consuls, 86 B. C. After the death of Marius the army refused to follow Cinna against Sulla and put him to death in 84 B. C. See MARIUS.

CINNABAR, *sin'na bahr*, red sulphide of mercury, the principal ore from which mercury is obtained, occurring abundantly in Spain, California, China, Austria, Russia, Peru and South America. It is of a cochineal-red color, and it is used as a paint under the name vermilion. See MERCURY.

CINNAMON, *sin'na mon*, a pleasing condiment, popular with cooks for certain pastries and confections. In its native state it is the bark



of the under branches of a species of laurel, which is chiefly found in Ceylon, but grows also in other parts of the East Indies. The tree attains the height of twenty or thirty feet, has oval leaves, pale yellow flowers and acorn-shaped fruit. The Ceylonese bark thar trees in April and November. The bark curls up into rolls or quills in the process of drying and the smaller quills are introduced into the larger ones for shipment. These are later assorted according to quality by tasters and are made into bundles. An oil of cinnamon is prepared in Ceylon, but the oil of cassia is generally substituted for it, indeed, the cassia bark is often substituted for cinnamon, to which it has some resemblance, although in its qualities it is much weaker. The leaves, the fruit and the root of the cinnamon plant all yield oil of cinnamon, a drug of considerable value.

CIRCASSIA, *sur'kash'ë a*, a region of European Russia, extending along the eastern shore of the Black Sea. It became Russian in 1829. The principal source of wealth in the district is petroleum.

Circassians, the name of the people who inhabit Circassia. Both the men and women are noted for their physical perfection, and although they are somewhat dark the women for scores of years, until recently, have been sold into Turkish harems. The religion of the higher class is Mohammedan, but the lower classes are drifting away from the strict letter of the faith, and their belief is half Christian. They number about 150,000.

CIRCE, *sur'së*, a fabled sorceress of Greek mythology, who lived in the island of Aeaea, represented by Homer as having converted the companions of Ulysses into swine, after having caused them to partake of an enchanted beverage. Milton, in *Comus*, refers to the fable thus:

Who knows not Circe,
The daughter of the Sun, whose charmed cup
Whoever tasted, lost his upright shape,
And downward fell into a groveling swine?

Ulysses, under the guidance of Mercury, resisted her enchantments and compelled her to restore his companions.

CIRCLE, *sur'kë l*, a plane figure contained by one line, called the *circumference*, which is so drawn that all its points are equally distant from a certain point within, called the *center*. The *diameter* of the circle is a line drawn through the center and terminat-

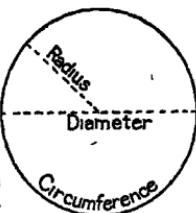
ing at the circumference. The *radius* is one-half the diameter. A *great circle* is one on a sphere, whose center coincides with that of the sphere. All other circles on a sphere are *small circles*.

People who have studied higher mathematics have proved that the diameter of a circle multiplied by $3.14159\dots$ will give the circumference. Boys and girls can prove this in a simple way. Measure the distance around a drinking cup, a pan and a pail, then measure the diameter at the same points. Divide the circumference by the diameter and the quotient will be found in each case to be about $3\frac{1}{4}$, or $3.14159\dots$. There is always this same relation between diameter and circumference.

The area of a circle cannot be demonstrated in the same way by boys and girls, but when they have studied geometry they will learn that the area equals the radius (half of the diameter) multiplied by itself and this product multiplied by $3.14159\dots$. In other words, the area equals the square of the radius times $3.14159\dots$. See **MENSURATION**, subhead *Circle*.

CIRCULATION, the flowing of the blood through the arteries, veins and capillaries, whereby the body tissues are provided with nourishment. Arterial blood leaves the left ventricle of the heart, flowing through the aorta and its branches, which carry it to all parts of the body except the lungs. It passes through the capillaries, giving up oxygen and taking carbonic acid, then through the veins, returning to the heart through two large veins that pour their contents into the right auricle of the heart. This auricle contracts, forcing the blood into the right ventricle, which in turn forces it into arteries, that carry it to the lungs, where it gives up carbonic acid and receives oxygen.

Four pulmonary veins carry the blood from the lungs to the left auricle, which forces it into the left ventricle, whence we commence to trace it. The circulation from the right side of the heart through the lungs to the left side of the heart is called the *pulmonary circulation*, and that from the left side of the heart through the body to the right side, the *systemic circulation*. A



portion of the blood in the intestines is carried through the portal vein to the liver, where, after passing through a fine network of capillaries, it is carried through the hepatic veins to one of the large veins of the systemic circulation. This is called the *portal circulation*. A drop of blood makes the round from the left ventricle and back to it in about thirty seconds.

Although Galen, who had observed the opposite directions of the blood in the arteries and veins, may be said to have been upon the very point of discovering the circulation, William Harvey in 1628 pointed out the connections between the heart, arteries and veins, the reverse directions taken by the blood in the different vessels, the arrangements of valves in the heart and veins so that the blood could flow only in one direction, and the necessity of the return of a large proportion of blood to the heart to maintain the supply. In 1661 Malpighi with a microscope examined the circulation in the web of a frog's foot and showed that the blood passed from arteries to veins by capillaries.

Related Articles. Consult the following titles for additional information:

Aorta	Arteries	Heart
Blood	Capillaries	Veins

CIR'CUS. Among the ancient Romans a circus was a long building without a roof, in which public chariot races, exhibitions of pugilism and wrestling and other games took place. It was rectangular, except that one short side formed a half-circle; on both sides and on the semicircular end were the seats of the spectators, in tiers sloping backwards. On the outside the circus was surrounded with colonnades, galleries, shops and public places. There were eight or ten circuses at Rome, of which the largest was the Circus Maximus, 1,875 feet long and 625 feet wide, capable, according to Pliny, of containing 260,000, and according to Aurelius Victor, 385,000, spectators. At present, however, but few vestiges of it remain, and the Circus of Caracalla is in the best preservation. The games celebrated in these structures attained great importance and magnificence. Some of them were feats of skill such as are celebrated to-day—races, gymnastic contests, etc., with men of high rank engaged. Again, some of the spectacles were revolting to the modern mind. There were combats with wild beasts, in which beasts fought with beasts or with men, criminals or volunteers, an ex-

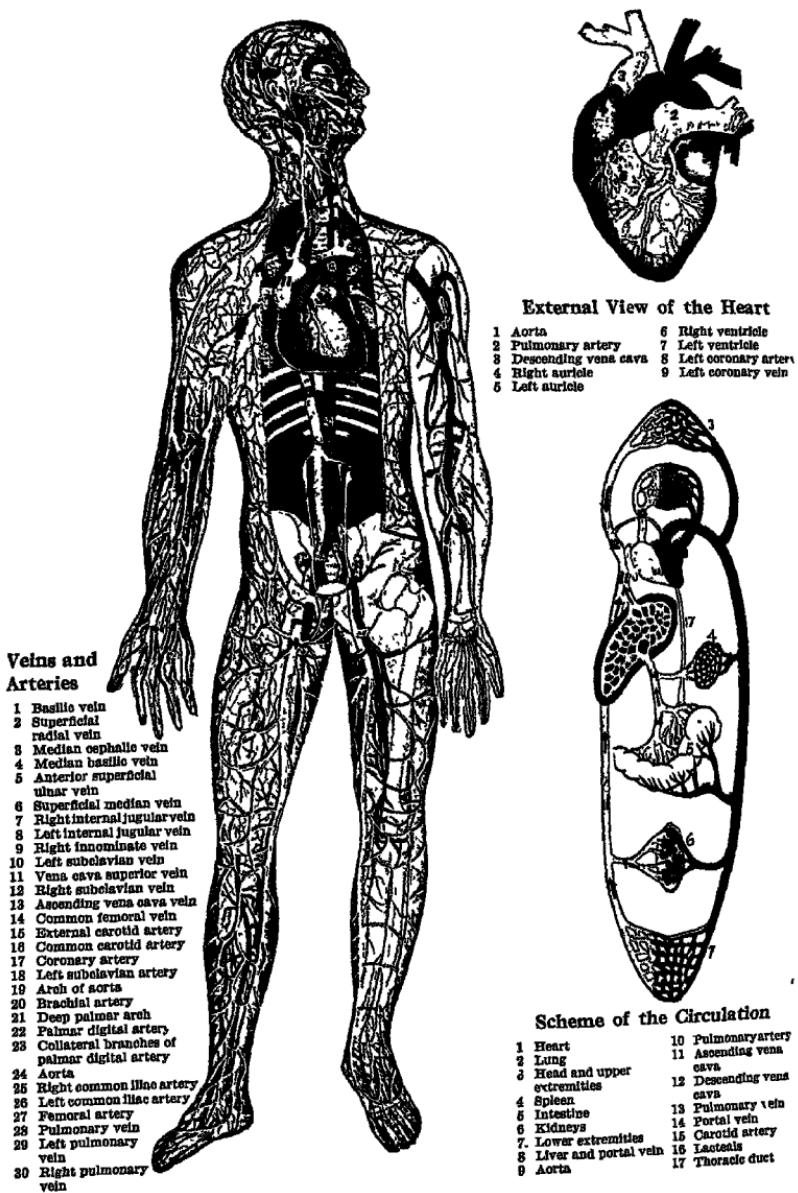


Plate used by permission of the Caxton Company, Chicago

CIRCULATION OF THE BLOOD

Outline of the Circulation of the Blood

<p>I. ORGANS</p> <ul style="list-style-type: none"> (1) Heart <ul style="list-style-type: none"> (a) Shape (b) Size (c) Position (d) Weight (e) Structure <ul style="list-style-type: none"> (1) Parts (2) Valves (3) Action (f) Nerve supply (g) Function (2) Arteries <ul style="list-style-type: none"> (a) Distribution (b) Structure <ul style="list-style-type: none"> (1) Coats (2) Capillaries <ul style="list-style-type: none"> (a) Definition (b) Function (c) Size (d) Structure (c) Circulation in arteries (d) Anastomosing (e) Pulse (3) Veins <ul style="list-style-type: none"> (a) Definition (b) Purpose (c) Structure <ul style="list-style-type: none"> (1) Coats (2) Valves (d) Circulation of the veins II. SYSTEMS <ul style="list-style-type: none"> (1) Pulmonary <ul style="list-style-type: none"> (a) From the right side of the heart (b) Through the lungs (c) To the left side of the heart (2) Systemic <ul style="list-style-type: none"> (a) From the left side of the heart (b) Through the body (c) To the right side of the heart (3) Portal III. BLOOD <ul style="list-style-type: none"> (1) Definition (2) Amount (3) Temperature (4) Composition <ul style="list-style-type: none"> (a) Corpuscles (b) Serum (5) Coagulation

<p>IV. CAUSES OF CIRCULATION</p> <ul style="list-style-type: none"> (6) Functions <ul style="list-style-type: none"> (1) Force of heat (2) Elasticity of arterial walls (3) Contraction of the heart (4) Muscular action (5) Act of breathing 	<p>V. FUNCTIONS</p> <ul style="list-style-type: none"> (1) Nourishment (2) Purification (3) Elimination of waste (4) Warmth
<p>VI. HYGIENE</p> <ul style="list-style-type: none"> (1) Air and sunlight (2) Exercise (3) Heat and cold (4) Pressure (5) Accidents 	
<p>VII. DISEASES</p> <ul style="list-style-type: none"> (1) Congestions (2) Inflammation (3) Scrofula (4) Colds (5) Catarrh 	
<p>VIII. ASSOCIATED PROCESSES.</p> <ul style="list-style-type: none"> (1) Absorption (2) Assimilation (3) Secretion (4) Excretion 	

Questions on Circulation

What is circulation? Name the organs of circulation.

Describe the heart Define arteries; veins.

Explain auricle and ventricle.

Describe the circulation of the blood

Of what is blood composed?

What are the uses of the blood? What is the normal temperature of the blood?

What is the color of the blood in the veins? In the arteries? What causes the change?

Describe coagulation What are the parts coagulated?

Give the functions of the red corpuscles

Distinguish between the pulmonary and systemic circulation.

What vein carries the blood to the liver?

How long does it take the blood to make a complete circuit of the system?

hibition which was especially attractive to the Romans. Under the Empire this kind of show was transferred to the amphitheater.

The expense of these games was often immense. Pompey, in his second consulship, brought forward 500 lions at one combat of wild beasts, which, with eighteen elephants, were slain in five days. These shows were free to the people, and their love for them appears from the cry with which they addressed their rulers: "Bread and the games."

The modern circus is a place where animals are trained to perform antics, and where exhibitions of acrobats and various pageantries, including a large amount of comic acting by clowns are presented for the amusement of the spectators. This form of entertainment has become especially popular. (See BARNUM, PHINEAS TAYLOR).

CIRRHOSIS, *sis'ro'sis*, from Greek words meaning *orange-colored*, is the name applied to a disease of the liver, lungs, spleen, heart or stomach. The organ affected becomes somewhat hardened or fibrous, due to an increase of connective tissue, and undergoes gradual degeneration. There are two varieties of the disease; in one the organ decreases in size, and in the other it becomes larger. The liver is most frequently affected.

See LIVER.

CISALPINE, *sis'al'pin*, REPUBLIC, a state founded by Bonaparte in 1797 in Northern Italy. It included Lombardy, Mantua, Verona, Cremona, Brescia, Bergamo, Rovigo, the Duchy of Modena, Massa, Carrara, Bologna, Ferrara and the Romagna; it had in all an area of over 16,000 square miles and a population of 3,500,000. Austria recognized the republic in the Treaty of Campo Formio, but the new state was dissolved in 1799 by the victories of the Austrians and Russians. It was regained by Napoleon Bonaparte in 1800, took the name of the "Italian Republic" in 1802 and elected Bonaparte as President. Three years later it became the "Kingdom of Italy," with Napoleon as king, and it continued as such until 1814.

CISTERCIANS, an Order of monks, a branch of the Benedictines founded by Robert, abbot of Molseme, in 1098. The habit was white with a black scapular. The rules of the Order were very strict, and for the first century of its existence it included only a few members. Early in the thirteenth

century it was joined by Saint Bernard and thirty followers, and from that time on it grew rapidly. By the middle of the fourteenth century there were 700 abbeys located in France, Ireland, Spain, Portugal, Norway, Sweden and Germany. In recent times the Order has declined, and there are now only a few abbeys, principally in Italy and Austria. At the time of their greatest prosperity the Cistercians were much interested in literature and art and collected many manuscripts for their libraries. Their churches were distinguished by their simplicity and had no paintings or sculpture; but it is to them that the beginning of Gothic architecture may be traced.

CISTERN, *sis'tern*, a large tank, either above or below ground, for holding water. Cisterns may be made of wooden staves held together by hoops of iron, galvanized iron or other sheet-metal; they are also frequently made by lining the walls of an excavation in the ground with brick or cement. Cisterns are used for storing water in localities where the inhabitants have to depend upon rain water for domestic purposes, but not for drinking.

If a cistern is circular, with a flat base, the reader may learn how to ascertain how much it will hold by reference to the article Cylinder.

CITIES OF REFUGE, six out of the forty-eight cities given to the tribe of Levi in the division of Canaan, set apart by the law of Moses as places of refuge for the manslayer or accidental homicide. Their names were Kedesh, Shechem and Hebron, on the west side of Jordan; and Bezer, Ramoth-Gilead and Golan, on the east. No part of Palestine was far from a City of Refuge. The manslayer fled to the nearest one, where he was guaranteed a fair trial, safe from personal or mob fury; if not guilty of wilful murder he could remain in the city.

CITIZEN, a member of an organized political society, as a state or nation. Originally, a citizen was any one entitled to share in the management of a city-state, but gradually the limits of citizenship have been extended until now, in modern republics, almost every resident is a citizen. In the monarchies of Europe the term is used to denote a resident of a municipality, the citizen's relations to the state being expressed by the word *subject*. In the United States a citizen is one who owes allegiance and sup-

port to the government and is entitled to its protection; it includes women, children, criminals, persons of all races except alien residents. Citizens are of two classes; they are *natural-born*, that is, born within the jurisdiction of the country, or *naturalized*, that is, have taken legal steps to renounce allegiance to their former country and swear fealty to the country of their adoption.

Citizenship does not imply the right to vote, for the latter may be withheld or granted to classes or individuals at the will of the government. Women are citizens (the old name for a female citizen was *citess*), but not everywhere are they entitled to vote (see WOMAN SUFFRAGE).

CITRIC, *sī'rik*, ACID, the acid of lemons, limes and some other fruits. It is generally prepared from lemon juice, and when pure it is white, inodorous and extremely sharp in its taste. In combination with metals it forms crystalline salts, known as citrates. The acid is used to prevent the formation of colors not wanted in calico printing; it is also used as a substitute for lemon juice in making beverages, and for allaying thirst in fever.

CITRON, a large, sour fruit, much like a lemon, but scarcely edible, unless preserved in sugar. The citron tree is small, and has been a favorite since the days of ancient Rome. In the United States it is cultivated only in Florida and California. The name *citron* is also given to a small, hard water-melon that is used for pickles and preserves almost everywhere.

CITRUS, an important genus of about thirty plants that includes the orange, citron, lemon, lime, grapefruit and other fruit trees and shrubs, all of which are described in this work under their common names. The citrus plants have rather long, pointed leaves or leaflets, united by a distinct joint to the leaflike stalk; their stamens are united by their filaments into several irregular bundles, and they have pulpy fruits with spongy rinds.

CITY, in the commonly-accepted sense, a large town, but there are no legal restrictions governing the application of the term. In America a city is a thickly-populated section, with legally-defined boundaries, divided into small political units called *wards*, each ward electing one or two men called *aldermen* who join with aldermen from

other wards in forming the *common council* or *board of aldermen*, who pass laws called *ordinances* for the government of the community. At the head of the executive department is the *mayor*, whose duty is to enforce all city laws faithfully. Other officers are *city clerk*, *city treasurer*, *assessor*, etc., who, with the mayor and aldermen, are elected by the people. Still other officials are appointed to fill other stations, such as *street commissioner*, *police chief*, and the like.

There is no legal rule by which it is determined when a village or town is large enough to become a city. It is believed that Oak Park, Ill (Chicago suburb), population, 64,000, is the largest town in the world adhering to village government, it prefers not to be a city. In Michigan, another town, 875 population (1930 census) preferred to become a city, with two wards. The people of each community decide for themselves when they wish a city government, at which time they apply for a *charter* from the state. The charter is a constitution under which the municipality is to be governed.

As a village, a community cannot do many things a city is permitted to do. It cannot go into debt beyond a certain moderate sum for public improvements, while a city may borrow money and issue bonds for repayment for much larger amounts. As a town grows large the ward system of representation in the local law-making body is preferred to the village common council plan, which can have but six members in its legislative body.

One of the peculiar developments of modern times is the centralization of population in cities. Consequently there have arisen certain striking characteristics of city life. The city has become the center of culture and commerce, but at the same time it is often the center of poverty and degradation. It is therefore the breeding place of class antagonism, of criminal influence and of disease. Side by side with these developments have arisen problems which constitute some of the most important social, economic and political questions of the time. See COMMISSION FORM OF GOVERNMENT; CITY PLANNING, CITY MANAGER.

Fifty Largest Cities of the World. In countries where the census is taken regularly and can be relied upon, the census figures are given; in other instances, particularly af-

fecting Chinese and African cities, careful estimates, based on the best available information, are given:

1. London, 8,202,818	28. Birmingham, 1,002,-
2. New York, 6,930,446	29. Peiping, 1,000,000
3. Tokyo, 5,812,000	30. Mexico, 1,000,000
4. Berlin, 4,190,847	31. Milan, 982,000
5. Chicago, 3,376,438	32. Nagoya, 907,000
6. Shanghai, 3,259,000	33. Cleveland, 900,428
7. Paris, 2,871,039	34. Canton, 900,000
8. Moscow, 2,781,800	35. Madrid, 886,000
9. Osaka, 2,453,573	36. Brussels, 886,000
10. Leningrad, 2,228,-	37. Sao Paulo, 879,788
1000	38. Liverpool, 855,589
11. Buenos Aires, 2,-	39. Prague, 850,000
100,000	40. Hong Kong, 840,200
12. Rio de Janeiro, 2,-	41. Naples, 840,000
830,000	42. St. Louis, 821,980
13. Philadelphia, 1,-	43. Montreal, 818,587
1,950,861	44. Baltimore, 804,874
14. Vienna, 1,886,000	45. Kobe, 787,000
15. Detroit, 1,568,662	46. Boston, 781,188
16. Calcutta, 1,419,300	47. Barcelonas, 776,000
17. Budapest, 1,400,000	48. Copenhagen, 770,000
18. Tientsin, 1,387,000	49. Manchester, 766,333
19. Sydney, 1,288,660	50. Amsterdam, 760,000
20. Los Angeles, 1,238,-	048
21. Warsaw, 1,178,000	
22. Bombay, 1,157,851	
23. Hamburg, 1,143,000	
24. Glasgow, 1,088,000	
25. Cairo, 1,064,000	
26. Melbourne, 1,020,-	
1000	
27. Rome, 1,008,000	

Fifty Largest Cities in the United States. Within recent years the Census Bureau has issued annual estimates of the growth of cities. These are based on the average increase in population from decade to decade and do not take into consideration unusual local conditions which may rapidly increase population. The figures below are according to the Federal census of 1930:

1. New York, 6,930,446	22. Rochester, 328,132
2. Chicago, 3,376,438	23. Jersey City, 316,715
3. Philadelphia, 1,-	24. Louisville, 307,745
950,861	25. Portland, 301,815
4. Detroit, 1,568,662	26. Houston, 282,352
5. Los Angeles, 1,238,-	27. Toledo, 290,718
048	28. Columbus, 280,564
6. Cleveland, 900,429	29. Denver, 287,861
7. St. Louis, 821,980	30. Oakland, 284,063
8. Baltimore, 804,874	31. St. Paul, 271,606
9. Boston, 781,188	32. Atlanta, 270,386
10. Pittsburgh, 668,817	33. Dallas, 260,475
11. San Francisco,	34. Birmingham, 259,-
634,894	678
12. Milwaukee, 578,249	35. Akron, 255,040
13. Buffalo, 573,076	36. Memphis, 253,143
14. Washington, 486,-	37. Providence, 252,981
869	38. San Antonio, 281,-
15. Minneapolis, 464,356	542
16. New Orleans, 458,-	39. Omaha, 214,006
762	40. Syracuse, 209,226
17. Cincinnati, 451,160	41. Dayton, 200,982
18. Newark, 442,337	42. Worcester, 195,311
19. Kansas City,	43. Oklahoma City,
399,746	185,389
20. Seattle, 385,588	44. Richmond, 182,929
21. Indianapolis, 364,-	45. Youngstown, 170,-
161	002

46. Grand Rapids, 168,592	48. Fort Worth, 163,447
47. Hartford, 164,072	49. New Haven, 162,655

Fifty Largest Cities in Canada. The last regular decennial census in the Dominion was taken in 1931. By this census the fifty largest cities in Canada are:

1. Montreal, 818,577	32. Moose Jaw, 21,399
2. Toronto, 681,207	33. Guelph, 21,075
3. Vancouver, 246,593	34. Glace Bay, 20,706
4. Winnipeg, 218,785	35. Moncton, 20,689
5. Hamilton, 165,647	36. Port Arthur, 19,818
6. Quebec, 130,594	37. Niagara Falls, 19,046
7. Ottawa, 126,872	38. Lachine, 18,630
8. Calgary, 82,761	39. Sudbury, 18,518
9. Edmonton, 79,197	40. Sarnia, 18,191
10. London, 71,148	41. Stratford, 17,742
11. Windsor, 63,108	42. New Westminister,
12. Verdun, 60,745	17,524
13. Halifax, 59,275	43. Brandon, 17,082
14. Regina, 58,209	44. St. Boniface, 16,305
15. St. John, 47,514	45. North Bay, 15,523
16. Saskatoon, 43,291	46. St. Thomas, 15,480
17. Victoria, 39,082	47. Shawinigan Falls,
18. Three Rivers, 35,450	13,845
19. Kitchener, 30,793	48. Chatham, 14,569
20. Brantford, 30,107	49. East Windsor, 14,251
21. Hull, 28,433	50. Timmins, 14,200
22. Sherbrooke, 28,833	
23. Outremont, 28,641	
24. Fort William, 26,277	
25. St. Catherine's, 24,-	
753	
26. Westmount, 24,235	
27. Kingston, 23,439	
28. Oshawa, 23,439	
29. Sydney, 23,039	
30. Sault Ste. Marie, 23,-	
682	
31. Peterborough, 22,827	

CITY MANAGER, an official appointed by the board of aldermen or common council of a city to manage all its business affairs. Such a system is a modification of the commission form of government (which see), and is the most modern step yet devised in the direction of centralizing authority and responsibility. The city manager is the one man accountable to all the citizens for the conduct of the public affairs of the town, with authority to hire and to discharge subordinates. He is paid a good salary, and he receives his appointment because of ability and fitness, often after a competitive examination. Small cities pay \$1,500 to \$2,000 per year; large cities, as much as \$6,000 to \$20,000, or more. Dayton, Ohio, was the first large city to adopt the plan (1914). Over four hundred cities in the United States have adopted the plan, or modifications of it, besides several cities in Canada. Among the large cities using it are Cincinnati, Rochester and Kansas City.

How to Study a City

A topical outline of a city is given below. It is subject to such amendment as may be necessary to meet local needs:

THE CITY

<p>I. MAP OF CITY</p> <p>II. DESCRIPTION</p> <ul style="list-style-type: none"> (a) Area and population (b) Location <ul style="list-style-type: none"> (1) In township (2) In county (3) In state (4) Direction from other cities <p>III. GOVERNMENT</p> <ul style="list-style-type: none"> (a) Chief executive <ul style="list-style-type: none"> (1) Title (2) How chosen (3) Length of term (4) Duties (b) Other officers <ul style="list-style-type: none"> (1) Financial <ul style="list-style-type: none"> (a) Treasurer (b) Assessor (c) Collector of taxes (2) Clerk (3) Judicial (c) Appointive officers <ul style="list-style-type: none"> (1) Health (2) Education (3) Parks (4) Streets (5) Water Superintendent (6) Fire (7) Police <p>IV. EDUCATION</p> <ul style="list-style-type: none"> (a) Board of education (b) Superintendent of schools (c) Public schools and buildings (d) Private institutions 	<ul style="list-style-type: none"> (1) Kinds (2) Endowments (3) Rank among other schools of same kind <p>V. PUBLIC UTILITIES</p> <ul style="list-style-type: none"> (a) Rail and water communication (b) Street railways (c) Water supply (d) Lighting systems; how owned <ul style="list-style-type: none"> (1) Electric light (2) Gas <p>VI. PARKS AND BOULEVARDS</p> <ul style="list-style-type: none"> (a) Parks <ul style="list-style-type: none"> (1) Number (2) Area (3) How controlled (4) How supported (b) Boulevards <ul style="list-style-type: none"> (1) Extent (2) Special rules governing <p>VII. COMMERCE AND INDUSTRY</p> <ul style="list-style-type: none"> (a) Banking strength (b) Manufactured articles <ul style="list-style-type: none"> (1) Kinds (2) Market (3) Annual value (4) Persons employed in manufactures (5) Wages paid annually <p>VIII. STUDY OF CHARTER</p> <p>IX. HISTORY</p> <ul style="list-style-type: none"> (a) When settled (b) Date of organization as a village (c) Date of change to city government (d) Notable events (e) Persons more than locally known
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CITY PLANNING. Formerly cities grew to large proportions without concerted action of their people to build for the highest good and to the best advantage of the community. Little attention was paid to features which would make for public convenience, civic beauty, health and demands of an esthetic nature. The path the calf made through the primeval forest became the main street of the village and eventually the leading thoroughfare of the city. From this in all directions grew the town, often in haphazard fashion.

People have awakened to the error of this irresponsible development, which has been excused because of rapid growth under pioneer conditions. They are learning that definite plans for city development are profitable, and properly carried out make for happiness, health and prosperity.

Accordingly, city plan commissions, headed by competent men—architects, landscape gardeners, builders, sanitary experts—exist now in many cities. Their duty is to enforce growth along lines which shall ultimately be

of greatest benefit to all the people. They provide for expansion of business—retail, wholesale, factory sections—in such parts of town as shall be most convenient and least objectionable; they determine where transportation is needed; where streets and parks shall be placed; how buildings shall be constructed with respect to light, air and sanitation.

Instances are at hand of cities which have demolished miles of buildings in order to work out new plans for streets, boulevards and parks. Such radical steps were taken in Chicago to afford egress from the crowded "loop" district to residence sections. The city of Washington took steps to halt ill-advised development and to build hereafter on plans proposed many years ago. San Francisco, after the disaster of 1906, rebuilt on scientific plans. The new capital city of Australia, Canberra, was built according to a plan previously outlined.

CITY STATE, a state whose boundaries are the limits of a single city. In such a state the political life of the state and the city are identical. No such organization exists today. Great ancient examples were Athens and Rome. In the Middle Ages five Italian towns were city states—Milan, Genoa, Venice, Florence, and Naples. In the old city state its people owed allegiance to the city that was their home rather than to the country in which it was located; for example, Athenians owed first allegiance to Athens, not to Greece. The nearest modern examples were the free cities of Hamburg, Bremen, and Lubeck, but their peculiar distinction was lost in 1934, under Nazi decree.

CIVET, *si'vet*, or **CIVET CAT**, an animal resembling both the weasel and the fox, found in North Africa and in Asia from Arabia to Malabar and Java. It is from two or three feet long and ten inches high, and of a grayish color, tinged with yellow and marked by dusky spots in rows. Civets prey upon birds and small animals, and they are also fond of the eggs of the crocodile. The body of the civet contains a pouch in which is found a fatty substance which smells like musk. This substance is used in making a valuable perfume.

CIVIL DEATH, the extinction by law of a man's rights as a citizen. A criminal sentenced to be executed suffers civil death as soon as sentence is passed upon him. Imprisonment for life is in effect civil death;

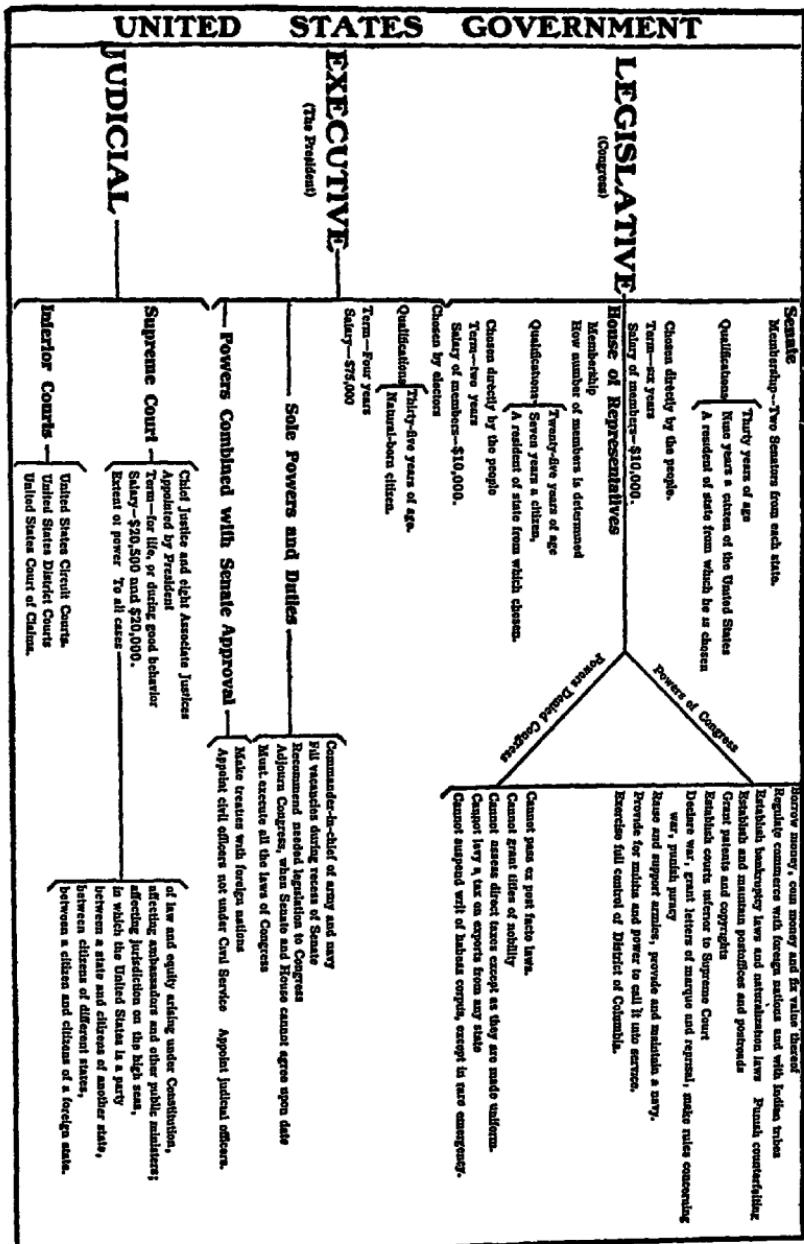
in New York state this condition is emphasized by the fact that a life sentence to prison operates automatically as a divorce of the condemned from his wife, if he is a married man. Every tie that binds him to the world is severed.

CIVIL GOVERNMENT, a term which means a government in the control of its citizens, from the Latin *civis*, meaning *citizen*. This definition does not imply that all citizens participate directly in the conduct of affairs, for that is manifestly impossible; it means that the source of all power is in the people, and that they delegate actual control to representatives whom they choose for this task. The basis on which such a government rests is a written instrument called a constitution.

Civil government as it relates to the great business of conducting affairs which pertain to the entire United States is outlined in the diagram accompanying this article.

Related Articles. Consult the following titles for additional information:

GENERAL	
Alien	Income Tax
Annexation	Inheritance Tax
Australian Ballot	Internal Revenue
Autonomy	Lands, Public
Ballot	Law
British North America	National Debt
Act	Naturalization
Caucus	Passport
Chargé d' Affaires	Primary, Direct
Charter	Privy Seal
Citizen	Province
Civil Death	Recall, The
Coast Guard	Registration
Conservation	Republic
Constitution	Reputation
Constitution of the	Seal
United States	Single Tax
Customs Duties	Sovereignty
Diplomacy	Squatter Sovereignty
Election	Stamp
Electoral Commission	State
Exterritoriality	Subsidy
Extradition	Suffrage
Flag	Tariff
Forest and Forestry	Tax
Forests and Forest	Territory
Reserves in Canada	Toll
Franchise	Treason
Franking	Treaty
Free Trade	Voting Machine
Government	Woman Suffrage
Imperialism	
LOCAL	
Alderman	County
Burgomaster	Fire Department
City	Garbage
City Manager	Mayor
City Planning	Municipal Government
Commission Form of	Municipal Ownership
Government	Police
Commune	Poll Tax
Constable	Sheriff
Coroner	Town Meeting
EXECUTIVE	
Agriculture, Depart-	Civil Service
ment of	Civil Service
Ambassador	in Canada
Bureau	Commerce, Depart-
Cabinet	ment of
Census	Consul



Crown	Navy, Department of the
Czar	Nazi-ism
Dauphin	Pardon
Dead-letter Office	Pasha
Dictator	Post-office Department
Divine Right	Premier
Doge	President
Education, Office of, Commissioner of,	Prince
Electoral College	Privy Council
Emperor	Queen
Exchequer, Chancellor of the	Rajah
Executive Department	Regent
Governor-General	Royal Canadian Mounted Police
Imperator	Sanitary Commission
Imperial, Department of the	Secret Service
Kaiser	Shah
Khan	Stadtholder
Khedive	State, Department of
King	Sultan
Labor, Department of	Supremacy, Royal
Lieutenant-Governor	Theocracy
Majesty	Treasury
Mikado	Veto
Mint	Weather Bureau
LEGISLATIVE	
Amendment	Legislature
Assembly	Lobby and Lobbying
Bundesrat	Local Option
Civil Law	Parliament
Common Council	Pure Food Laws
Congressional Record	Reichstag
Congress of the United States	Representatives, House of
Congressman at Large	Senate
Diet	Senate of the United States
Duma	Short Ballot
Executive Council, in Canada	Speaker
Initiative and Referendum	Statute
See Court	Zemstvo
JUDICIAL	

CIVILIZATION. French scholars of the eighteen century adopted this term and gave it its present meaning. They thought that civilization stands in contrast to feudalism and the crude life of the early middle ages and that it always denotes a rich development in knowledge and education.

Today we prefer to contrast civilization with life among savages who in many respects live always far below the level of the people of the middle ages in Europe.

Civilization Described. Perhaps an explanation of certain characteristics of civilization will serve our purpose. A civilized person fits into society at very many points; he shares in home life; he follows one or more occupations; he appreciates art of many kinds; he takes a part in government.

Civilization is not handed down through natural inheritance from one's parents. Of course neighboring peoples show racial differences and certain traits inherited from ancestors, but such matters as languages, mechanical skill and good business judgment are not given to us by heredity.

Civilization is not a fixed and stable product. It is a growth that depends on many

circumstances and which may be hindered and even stopped entirely. The Roman civilization developed through a thousand years and then declined and disappeared. There are many forces that work against civilization. And yet when it has been "destroyed" its best features reappear in the life of later nations; thus happened in the case of the civilization of the Incas in Peru.

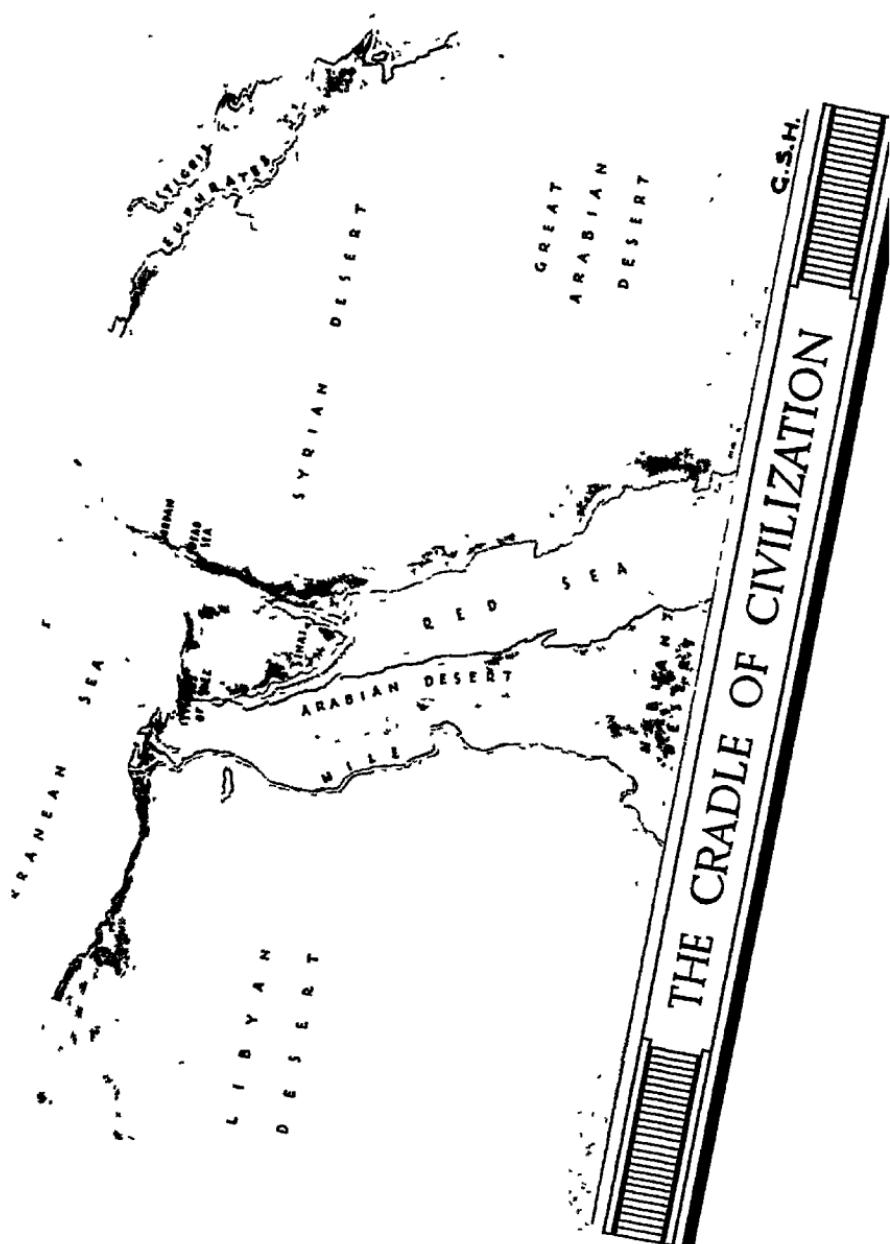
How Civilization Arose. Sooner or later we must face the question, "Did civilization arise in one place and then spread from nation to nation?" There are many similarities in language, customs and ways of thinking which seem to indicate that all men derived these features from a common center. On the other hand a closer examination makes it clear that no race has a sure claim to superior intelligence and that inventive and pioneering minds arise in many parts of the inhabited world. It is necessary to admit then that civilization sprang up in different places and in different periods of human history.

Progress in Civilization. All peoples and tribes possess some degree or traces of civilization; all civilizations exhibit progress during some periods of their history although the rate of progress may be slow at times. This change from rapid to slow development disclosed among other things the competition between the conservative and the progressive members of society. When the people respect very highly the accomplishments of centuries past, scholars like the learned men of old China take the lead in society and civilization is slowed down.

As civilization advances duties and many kinds of labor are distributed among individual persons and cooperation on a large scale becomes necessary. In this way priests, scientists, lawyers, merchants, artists, government officials, teachers, find their places in society. Civilization thus becomes very complex and the increase of knowledge is beyond calculation.

Civilization requires that the individual surrender many of his desires, but he gains much from so doing.

Prominent Features in Civilization. Some of the factors that contribute to civilization and which help to fix its character are the following: The special bodily structure of man with his special senses, his feet and his highly developed hands; the close relation of geographical position to



men's occupations, language as a means of exchanging ideas; literature in which men like Homer, Dante, John Bunyan, the authors of the *Ramayana* of India and of the Bible have molded centuries of human history, great ideals such as the brotherhood of man, service, progress and justice; leaders of heroic character such as Moses, Alexander the Great, Pericles, Saint Augustine, Alfred the Great, Shakespeare, Blackstone the jurist, Frances Willard and Jane Addams; great institutions such as Christianity, government and the home.

In the study of civilization one must sketch the developments in methods of gaining food, carrying on agriculture, domestication of animals, control of fire, mining, metal working, textiles, architecture, music, domestic arts, commerce, medicine, religion and morals.

Civilization promotes the development of countless social institutions such as colonization schemes, emancipation of slaves, conservation of natural resources, crusades and world-wide campaigns, constitutions for governments, trial by jury, international organizations and the laws of nations.

H. L. L.

Related Articles. Consult the following titles for additional information:

Age of Man	Cliff Dwellers
Anthropology	Economics
Architecture	Education
Arms and Armor	Esthetics
Arts and Crafts	Evolution
Bible	Gibbons
Biography	Government
Book	Guizot
Bronze Age	Hegel
Buckit	Internationalism
Buddhism	Jesus Christ
Burbank	Literature
Burroughs	Philosophy
Byzantine Art	Pope
Calendar	Religion
Carnegie	Science and the
Cathedral	Sciences
Cave Dwellers	Sociology
Chautauqua	State
Children	Universal Language
Societies for Chivalry	University
Christianity	Woman Suffrage

CIVIL LAW, that code of law which deals with a man's relations with his fellow man, in which the state's only interest is to see that justice rules their conduct towards one another. *Civil* is from the Latin *civis*, meaning *citizen*, civil law is thus explained. It differs from criminal law in that the state becomes responsible for the safety of its citizens against those who commit crimes; the state cannot delegate corrective responsibility to individuals for crimes against the whole people.

If a violation of law affects the welfare only of the persons directly concerned, as when a man refuses to pay a debt or when one person trespasses upon the land of another, civil laws are invoked. A robbery or a murder, on the other hand, renders the whole community unsafe, and criminal laws are invoked; the state then becomes the prosecutor in behalf of the people. See *LAW*.

CIVIL LIST, a statement of appropriations for support of royal houses of Europe, for which appropriations are made yearly by legislative bodies.



ognized, to the utter demoralization of the routine of public business and distress of worthy employees.

All the presidents from Washington to John Quincy Adams, inclusive, had caused the discharge of only 112 government employees, in each case for a substantial reason. Andrew Jackson and his followers, in 1829, inaugurated a new system, to reward those who had worked for the Jackson party at the election; they believed that "to the victors belong the spoils of office." Thousands of experienced employees were dismissed. Succeeding administrations adopted the same policy. The custom was at length acknowledged to be detrimental to public policy, from the standpoints of efficiency and justice to employees, and because a new President was obliged to spend upon office-seekers much valuable time needed for serious matters. In 1840 Horace Greeley wrote from Washington:

"We have nothing new here in politics, but large and numerous swarms of office-hunting locusts sweeping into Washington daily, all the rotten land speculators, broken bank directors, swindling cashiers, etc., are in full cry for office, office, and even so humble a man as I am is run down by letters, letters."

Office seekers, it is claimed, hastened the death of President William Henry Harrison in 1841. From that time the evils of party appointments and office-seeking grew steadily, until by 1870 it had undermined the efficiency of government administration.

Reform in Civil Service. General Grant, in 1872, undertook to suppress the evil, and, with the consent of Congress, he appointed a commission to make rules and regulations for admission to and continuance in the civil service. The rules reported, however, by this commission were never carried out to any considerable extent, on account of the political pressure which was brought to bear on Congress. President Hayes undertook to carry out Grant's plan, and a reform was instituted in several of the large postoffices of the country.

In January, 1883, Congress authorized the President to appoint, with the advice and consent of the Senate, three civil service commissioners, whose duty was to aid the President in preparing suitable rules providing for open, competitive examinations for testing the fitness of applicants for the public service, such examinations to be practical in their character, and, so far as might

be, to relate to those matters which would fairly test the relative capacity and fitness of the persons examined, to discharge the duties of the service.

Rules of the Civil Service. Information respecting the rules of the national civil service and the nature of the data for civil service examinations may be obtained at nearly every postoffice or by addressing the Civil Service Commission, Washington, D. C.

CIVIL SERVICE IN CANADA. The civil service of Canada is controlled by a Civil Service Commission, whose office is at Ottawa. This commission, composed of three members and a secretary, is appointed by the Governor-General in Council. Its duties are to test and pass upon the qualifications of candidates for admission and promotion; the actual work of examination is done by examiners under the control of the commission. The commission's powers also include the right to investigate the operation of the civil service laws, either independently or at the request of the minister or of the Governor-General.

The service is divided into two great branches known as the *inside* and the *outside* service. The *inside* service includes the employees of the executive departments at Ottawa, and the employees in a number of offices, such as those of the Auditor-General, the Governor-General's secretary, etc. The *outside* service includes the rest of the public service, such as the customs' officials, railroad and post-office employees. Thus the civil service list includes practically all the employees of the Dominion government except the heads of the departments.

Though the details of the classification and qualifications are too numerous to consider here, one fact of great importance must be noted. Members of the civil service pay five per cent of their salaries into a retirement or pension fund. The Governor-General in Council grants a pension from this fund to any person "who has served in an established capacity in the civil service for ten years or upwards, and who has attained the age of sixty years or become incapacitated by bodily infirmity from properly performing his duties." After a service of ten years an employee is granted a pension of ten-fifths of his average salary for the last three years; for each year of service over ten and up to thirty-five he is entitled to an additional one-fifth. If a person

dies while in the service, the amount to his credit in the retirement fund is paid to his legal heirs.



CIVIL WAR IN AMERICA, the great struggle from 1861 to 1865 between the Southern and the Northern states of the Union. The fundamental cause of the war was the growth of the institution of slavery in the South, after it had long been practically abolished in the North. This led to important differences of economic and political opinion and, especially, to the emphasis in the South of the principle of states' rights.

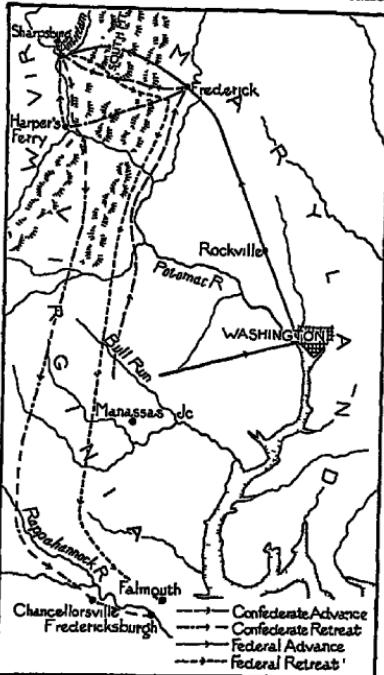
The natural outgrowth of such a belief was the doctrine of secession, and this was ultimately adopted. Between December 20, 1860, and February 1, 1861, the seven states of South Carolina, Mississippi, Florida, Alabama, Georgia, Louisiana and Texas passed ordinances of secession. On February 4, the government of the Confederate States of America was organized, and by July four other states, Virginia, North Carolina, Tennessee and Arkansas, had joined this new union.

In spite of numerous attempts at compromise, the war was meantime opened by the seizure on the part of Southern states of United States forts and arsenals, a step which had been made easy by the Southern sympathies of members of Buchanan's Cabinet. The first gun was fired at Fort Sumter, in the harbor of Charleston, S. C., on April 12, 1861, and the fort surrendered on the same day. Immediately after this event (April 15), President Lincoln called for 75,000 volunteers and declared the coast of the Southern states to be under blockade. The Confederacy also issued a call for volunteers and retaliated for the blockade by issuing letters of marque and reprisal.

The border states of Missouri, Kentucky, Maryland and Delaware were of immense importance to both parties, and steps were immediately taken to secure control of them. They at first remained neutral, but they later joined the Union cause.

The Year 1861. The first real military

movements of the war occurred in the western part of Virginia, each government desiring to hold this territory as a buffer against the operations of the other. The Confederates were soon driven from the region by General McClellan. The next important event was the first Battle of Bull Run, which resulted from an attempt on the part of General Irving McDowell to begin a campaign for the capture of Virginia. It resulted in a disastrous Federal defeat. Thereafter, General McClellan was called



FIRST INVASION OF THE NORTH

from West Virginia to take charge of the Federal troops, but he occupied the remainder of the year in increasing, drilling and equipping his force. A Federal force under Benjamin F. Butler suffered an important defeat at Big Bethel, and another force was almost completely destroyed at Ball's Bluff. Meantime, the State of Missouri was being saved to the Union by the activity of General Lyon, and in spite of a severe defeat at Wilson's Creek, in which Lyon was killed, the Federals under General

Curtis drove the Confederates from the territory.

Events of 1862. The year 1862 opened with rather gloomy prospects for the Union. The military situation improved in the spring, however, and at Mill Spring a decisive victory for the Federals under Thomas practically cleared Kentucky of Confederate soldiers. In February a Union force under General Grant, with the aid of a river fleet under Commodore Foote, captured Forts Henry and Donelson, with about 15,000 prisoners and vast amounts of ammunition, artillery and supplies. In April occurred the Battle of Shiloh, in which, after a terrible struggle, the Federals under Grant were victorious, and the able Confederate general, A. S. Johnston, was killed. A few days after the Battle of Shiloh the Federals occupied Corinth, an important strategic position. Late in the same month a large Union force under General Butler, ably assisted by Admiral Farragut with a fleet, reduced the forts guarding New Orleans and took possession of the city. About the same time, General Polk and Commodore Foote were capturing the important Confederate position on

(renamed the *Virginia*) occurred in Hampton Roads. (See MONITOR AND MERRIMAC.)

In the early spring of 1862, General McClellan, with the Army of the Potomac, undertook the first general land campaign of the war, in an effort to fight his way to Richmond and capture the city, which had been made the Confederate capital. After a campaign lasting for more than four months, of which the last month witnessed almost continuous fighting, the Federals were compelled to abandon the project, leaving Lee, the great Confederate chieftain, in practical control of the state of Virginia. Another campaign to the same end was immediately undertaken by General Pope; but on August 30, at the old battlefield of Bull Run, the Confederates won another hard-earned but complete triumph. After the second Battle of Bull Run, Lee determined upon a bold invasion of the North, in order to gain the border state of Maryland and to win a victory in the enemy's country, in the hope of making that victory the basis of terms of peace. He advanced into Maryland without serious opposition, but was overtaken at South Mountain, September 14, where a determined battle raged for a few hours. On the following day another fierce conflict was fought near Sharpsburg on Antietam Creek, and as a result Lee was compelled to retreat into Virginia and abandon his projected invasion. However, the Union army, besides its losses in battle, lost 12,000 men who had been captured by "Stonewall" Jackson at Harper's Ferry.

After Antietam, McClellan, on account of his dilatory tactics, was superseded as commander of the Army of the Potomac by General Burnside. The army fought but one battle under its new commander. This was at Fredericksburg, where the Federals attacked a strong Confederate position and

suffered terrible slaughter without gaining any advantage. Meanwhile, in the west the Confederates had made determined efforts



MILITARY OPERATIONS IN THE WEST IN 1862
Island No. 10. It was during the month of March of this year, also, that the famous battle between the *Monitor* and the *Merrimac*

to regain Kentucky and Tennessee General Bragg, with about 45,000 men, had marched into the state, occupying important positions, but was defeated at Perryville by General Buell and compelled to retreat, while Rosecrans had repulsed a determined attack by Van Dorn at Corinth. Rosecrans succeeded Buell as commander of the Army of the Cumberland, and on the last day of the year he met Bragg's army, which had returned to Tennessee, at Murfreesboro. After a terrific three days' battle the Confederates retreated.

Events of 1863. The year 1863 witnessed the crucial campaigns of the struggle, the turning point of the war. In the east, Burnside was succeeded by Joseph Hooker. At Chancellorsville Lee inflicted on Hooker a terrible defeat, and the victories at Chancellorsville and Fredericksburg encouraged Lee to make another invasion of the Northern states. The two armies therefore advanced northward on opposite sides of the Blue Ridge, each hastening to be the first to cross the Potomac. Just before the crucial point of this campaign, Hooker was relieved and Meade was placed in command of the Federal army. He immediately crossed the Potomac and harassed Lee until he was forced to give battle. This was at Gettysburg on July 1 to 4, where, after one of the most important combats of modern times, the Confederate advance was checked. This Federal victory was almost duplicated on exactly the same day at Vicksburg in the southwest, where U. S. Grant had been conducting a long siege and bombardment. The Confederate General Pemberton surrendered on July 4. In the same month, Port Hudson surrendered to General Banks, and within a few weeks the Mississippi River was freed from Confederate control. The year of 1863 witnessed important events in the states of Kentucky and Tennessee. First was the Battle of Chickamauga, in which the Federal Army of the Cumberland under Rosecrans was almost completely destroyed by the Confederates under Bragg. Soon afterwards, Grant became head of the Department of the Mississippi, which included all the western armies, and in November he directed the great Battle of Chattanooga, including the celebrated "Battle above the Clouds" and the gallant storming of Missionary Ridge, by which the Confederates were completely routed.

Grant in Command. In the following spring, Ulysses S. Grant, who had displayed remarkable ability in the west, was made commander in chief of all the armies of the Union and took personal charge of the Army of the Potomac in Virginia. Under his



SECOND INVASION OF THE NORTH

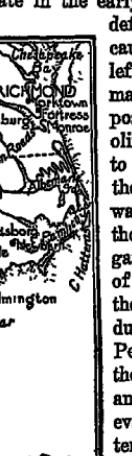
direction an army of 100,000 men under General Sherman was to advance from Chattanooga to Atlanta and, if possible, crush the army of General Joseph E. Johnston, while the Army of the Potomac was to proceed toward Richmond and capture or destroy the famous Army of Northern Virginia under Lee. The advance was begun May 4. The first battle in the east was on May 5, in the so-called Wilderness, just south of the Rapidan River. Neither side gained a decisive victory. Grant continued his movement by ordering a march around Lee's right flank, but was again confronted at Spottsylvania Court House by Lee's whole army and was defeated in his purpose to crush that force. Again taking up the movement about the enemy's right, he was compelled to give battle at the North Anna River, but was again defeated and for the third time made a circuitous march to the left about Lee's position. At Cold Harbor the two armies again met, and after probably the most stubborn contest of the whole war Grant withdrew and attempted by his usual method to advance towards Richmond. At

Petersburg he was brought to an abrupt halt and was compelled to begin a siege, lasting nearly a year.

Meantime, in the Shenandoah Valley, the Confederates under Early had threatened Washington and had made costly raids upon Northern towns, but in the summer of 1864 they were driven from the valley by Federal cavalry under Sheridan. During this summer General Sherman was carrying out his part of the general campaign, advancing

torious during this year, the *Alabama*, the most conspicuous of the Confederate privateers, being sunk by the United States corvette *Kearsarge*, in the harbor of Cherbourg, France. In Mobile Bay another daring feat had been placed to the credit of the American Navy, Rear Admiral Farragut being the hero of the occasion.

Last Months of the War. The successes of the Union arms during 1864 were to culminate in the early spring in the complete defeat of the Confederate cause. General Sherman left Savannah February 1, marched with almost no opposition through the Carolinas and was soon ready to coöperate with Grant in the final campaign of the war. During the winter, though the Union army had gained little in its conquest of Virginia, the siege which the Confederates had endured at Richmond and Petersburg had reduced their power of resistance, and Lee determined to evacuate both places, attempt to join Johnston's army, which had made a faint protest against Sherman's advance, and flee to





SHERMAN'S MARCHES

slowly but steadily toward the important city of Atlanta against a brilliant resistance by General Joseph Johnston. Johnston was superseded, however, just as Sherman's campaign was drawing to a close, by General Hood. He was unable to stop the advance, and Sherman entered Atlanta, September 2. It was two months later that he left Atlanta and began his march to the sea, during which he destroyed everything of value in a strip sixty miles wide. He occupied the city of Savannah on Christmas Day. Meantime, General Hood had hoped to draw him from this operation by making a counter movement toward the north. Sherman dispatched Thomas to defend the State of Tennessee, and he did it admirably. Occupying Nashville, he awaited the approach of the Confederate force until December 15, when he opened a battle which resulted in the complete destruction of the Confederate army, the 15,000 survivors never being reorganized. On the sea the Union cause was also vio-

the mountains, where the contest could be continued indefinitely. The attempts of the Confederates to cut their way out of Petersburg, however, resulted in serious losses, and when the evacuation finally took place it was under such difficult conditions that Lee soon found himself confronted with the necessity of surrendering. This took place at Appomattox Court House, April 9, 1865. The wild rejoicing which this news caused at the North was suddenly hushed on the following Friday, April 14, by the assassination of President Lincoln, who, because of his unfailing common sense and high purposes, had become the central figure of the whole struggle. On April 21 Johnston surrendered to Sherman after a week of negotiation, and by May 26 all the forces of the Confederacy had laid down their arms. On May 10 President Jefferson Davis was captured and was sent a prisoner to Fortress Monroe.

Results. The war had lasted four years, it had commanded the services, all told, of

more than four million men three-fourths of whom were in the armies of the North. Nine of every ten men in the South, and four of every nine in the North, had served in the armies for an average of three years; 110,000 Union soldiers were killed in battle or died from wounds, while 250,000 others died from disease, exposure or other causes. The South lost 94,000 men in battle, and nearly 200,000 others died in the service. Thus, in both armies, an average of 700 men died each day from the beginning of the war to the end. The war cost the United States government in money fully three and a half billion dollars; it cost the Confederacy fully two billion dollars. In addition to these sums the United States government has paid out to Union soldiers more than three billion dollars in pensions. The total cost to both sections, excluding the terrible destruction of property and the loss caused by the check to production, doubtless amounted to at least nine billion dollars; this was an amount quite beyond precedent thus far in the world's history.

The greatest result of the whole contest was the abolition of slavery, which had been a constant source of weakness and dissension for a century. It made possible a real unity of all sections by removing the most conspicuous differences in their modes of life and thought. From the constitutional standpoint it decided that the United States was to be an "indestructible union of indestructible states."

Related Articles. Consult the following titles for additional information:

HISTORY AND POLITICS

Abolitionists	Hampton Roads Conference
Alabama, The	Kansas-Nebraska Bill
Andersonville	Mason and Dixon's Line
Appomattox Court House	Missouri Compromise
Carpetbaggers	Nullification
Compromise of 1850	Reconstruction
Confederate States of America	Secession
Crittenden Compromise	Slavery
Dred Scott Decision	States' Rights
Emancipation Proclamation	Tariff
Fugitive Slave Laws	Trent Affair
	Underground Railroad

BATTLES

Antietam	Fredericksburg
Ball's Bluff	Gettysburg
Bull Run	Kennesaw Mountain
Cedar Creek	Malvern Hill
Cedar Mountain	Mechanicsville
Chancellorsville	Mobile Bay
Chattanooga	Monitor and Merrimac
Chickamauga	Murfreesboro
Cold Harbor	Nashville
Fair Oaks	Petersburg, Siege of
Five Forks	Shiloh
Fort Sumter	Spotsylvania Court House
Fort Henry and Fort Donelson	Wilderness

LEADERS

Bragg, Braxton	Lincoln, Abraham
Burnside, Ambrose E.	Longstreet, James
Butler, Benjamin F.	McClellan, George B.
Davis, Jefferson	Meade, George G.
Early, Jubal A.	Pemberton, John C.
Farragut, David G.	Porter, David D.
Foote, Andrew H.	Rosecrans, William S.
Grant, Ulysses S.	Sammes, Raphael
Hood, John B.	Sheridan, Philip
Hooker, Joseph	Sherman, William T.
Jackson, Thomas J.	Thomas, George H.
Johnston, Albert S.	Wilkes, Charles
Johnston, Joseph E.	Winslow, John A.
Lee, Robert E.	

CLAIBORNE'S REBELLION, a dispute arising in the colonial history of Virginia and Maryland, in which the central figure was William C. Claiborne (1589-1676). He settled the Isle of Kent in Chesapeake Bay in 1631, established a trading post, and induced many colonists to join him there. As soon as Lord Baltimore was well established in Maryland he claimed Kent as a part of his colony, over the protest of Claiborne, who claimed it as his own, with Virginia more entitled to ownership than Maryland, for Kent had representation in the Virginia assembly. Virginia stoutly supported Claiborne. For years the dispute continued, with occasional loss of life and property; Claiborne was kept from the island by Baltimore's colonists. The ownership of the land in dispute was not settled until 1776, when Virginia withdrew its claim.

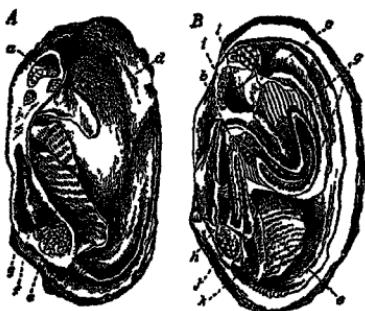
CLAIMS, COURT OF. See COURT OF CLAIMS

CLAIRVOYANCE, *clair voy/ans*, the alleged power of persons who claim to possess the gift of seeing into the future and thus being able to foretell coming events. People who practice this supposed art are called *clairvoyants*; they are ready to give advice on every conceivable subject—investment, speculation, courtship, marriage, lost articles—and ask their credulous patrons to believe that their information comes from beyond the range of human vision. Without hesitation they will advise a man how to acquire wealth, while unable to accumulate it for themselves.

A crusade against clairvoyants in most cities has greatly reduced their number. They are subject to arrest and prosecution everywhere.

CLAM, a shell-fish, of which the salt water variety is a food delicacy. It is one of the mollusca (see MOLLUSK), and there are a number of species. In America the name is applied to two species, the hard shell, or *quahog*, and the long, or soft, clam. The

quahog has a nearly globular shell and lives on sandy bottoms, on which it stands erect on its thin edge. It is found from Cape Cod south, in water from fifteen to forty feet deep, and in city markets it is generally known as the *clam*. The young are known as *little necks*; these are the most highly prized of all the clam foods.



THE CLAM

A—Right valve of shell, to show internal organs	B—Dissection
a Anterior muscle for closing shell.	g Intestine.
b Opening of reproductive organ	h Kidney.
c Brain.	i Liver.
d Foot	j Rear muscle for closing shell.
e Gill	k Space through which water passes in leaving shell.
f Heart.	l Stomach.

Soft clams have a thin, smooth, somewhat oval shell and possess siphons that are often longer than the shell itself. These clams burrow in the sand above low water mark to such a depth that only the tips of their siphons protrude. When disturbed they emit a spray of water from the siphon and withdraw from sight. They are obtained by digging them from the sands at low tide, and in many places they are found in large numbers. They are highly prized for food, and under favorable conditions are often cultivated. The term *clam* is also applied to fresh water mussels (see MUSSEL). The shell of the quahog was used as money by the Indians who formerly inhabited the New England states (see WAMPUM).

CLAN, the name given to an indefinite social institution which has existed in almost every stage of civilization, both in Eastern and Western countries. It signifies a group of families claiming descent from common ancestors and united under one leader. The most common principle upon which the clan

was organized was the obligation of all members to avenge one another's injuries. The most familiar form of clanship was furnished by the Highlanders of Scotland. Among them the name of the clan was frequently formed from that of the original ancestor, with the prefix *mac*, meaning son; thus the MacDonalds were the sons of Donald, and every individual of that name was considered a descendant of the founder of the clan and a brother of every one of its members. The chief exercised his authority by right of inheritance as the father of his clan. The clansmen revered and served the chief with the blind devotion of children. Each clan occupied a certain portion of the country, and hostilities with neighboring clans were frequent.

CLARENDON, EDWARD HYDE, Earl of (1608-1674), chancellor of England. He began his political career in 1640 as a member of the Short Parliament, and he was later in the same year returned to the Long Parliament. At first he acted with the more moderate of the popular party, but gradually separated himself from the democratic movement until, by the autumn of 1641, he was recognized as the leader of the king's party in the House. Upon the breaking out of the Civil War he joined the king, and was his valued aid until the latter's execution.

In September, 1649, he joined Prince Charles at The Hague. After Cromwell's death Clarendon did more than any other man to promote the restoration of Charles, who as a reward made him lord chancellor. The marriage of the duke of York with his daughter, Anne Hyde, confirmed for a time his power, but by 1663 his influence with the king began to decline, and his station as prime minister made the nation regard him as answerable for the ill success of the war against Holland and for the sale of Dunkirk. In 1668 the king deprived him of his offices, an impeachment for high treason was commenced against him and he was compelled to seek refuge in Calais.

CLARET, *klair'et*, a name generally applied to any red table wine, but more properly applied to Bordeaux wines. The term was first used in England, and it never became current in France.

CLARINET, or **CLARIONET**, a wind instrument of the reed order, regulated by the fingers on eighteen holes, thirteen of them having keys, the tone being produced by

the vibration of a thin reed in the mouth-piece. Its lowest note is E below the F clef, from which it is capable, in the hands of good performers, of ascending more than three octaves. A clarinet can be played in only one key, therefore different clarinets are attuned to different keys, B flat, A flat and E flat being those most commonly used. The instrument was invented as early as the year 1690.

CLARK, CHAMP [JAMES BEAUCHAMP] (1850-1921), an American lawyer and Democratic politician, born in Anderson County, Ky., and educated in the common schools and at Kentucky University, Bethany College and the Cincinnati Law School. At different times he

was employed as farm laborer, clerk, editor, lawyer and later became president of Marshall College in West Virginia. He removed to Missouri, and in 1889 was elected a member of the House of Representatives.

From that date he has served continuously in that body, except for two terms, from 1891 to 1893, and from 1895 to 1897. In 1911 he was elected Speaker of the House of Representatives, succeeding "Uncle Joe" Cannon, when the Republicans lost control of that body, and in the following year was an unsuccessful candidate for the Democratic nomination for President, being defeated by Woodrow Wilson, but not until the forty-sixth ballot. He was reelected Speaker in 1913, 1915 and 1917. When the Democrats lost control of the House of Representatives in the elections of 1918 Clark was succeeded in the Speakership in 1919 by a Republican.

CLARK, FRANCIS EDWARD (1851-1925), the founder of the United Society of Christian Endeavor, which grew from a small group in a single church until it reached around the world and embraced millions in its membership (see CHRISTIAN ENDEAVOR, UNITED SOCIETY OF). Clark was born in Aylmer, Ont., and was graduated at Dartmouth College and at Andover Theological Seminary. He held Congregational pastorates at Portland, Me., where the first Christian Endeavor group was organized,



CHAMP CLARK

from 1876 to 1881, and in Boston, from 1883 to 1887.

He made five trips around the world in the interests of the Christian Endeavor work; became editor of *The Golden Rule*, the organ of the Society, and wrote more than a score of books.

CLARK, GEORGE ROGERS (1752-1818), an American pioneer, of invaluable service to his country for more than a generation. He began life as a land surveyor. In 1776 he moved to Kentucky and soon became the leader of the frontiersmen. He was largely instrumental in securing the organization of Kentucky as a separate county. In 1777, then a major, Clark obtained means from Virginia to attack the fort at Kaskaskia, which he captured in the following year. To revenge an invasion of Kentucky by Canadians and Indians, he destroyed an Indian town in Ohio in 1780. In the same year he went to Richmond to obtain approval from the authorities for his plans for the capture of Detroit, and while there took a command under Baron Steuben to defend Virginia against an invasion by a British force. In 1782 he marched against Indian towns on the Miami and Scioto rivers, and destroyed five. Later, under French commission, he headed an expedition against the power of Spain on the Mississippi River. In his later years, he was in poverty, but Virginia presented him with an estate in what is now the state of Indiana.

CLARK, WILLIAM (1770-1838), an American explorer, who with Meriwether Lewis revealed knowledge to the world regarding the vast wilderness in 1804-1805 between the Mississippi River and the Pacific Ocean (see LEWIS AND CLARK EXPEDITION). He was born in Virginia, but was taken by his parents to Louisville, Ky., in 1784. He served in Indian campaigns with Wayne, but resigned from military life in 1796. In 1803 he again entered the army as second-lieutenant, and in the following year was placed in joint command with Lewis of the expedition for exploration of the Northwest. Upon his return he was made brigadier-general of militia, was governor of Missouri territory from 1813 to 1821, and from the following year until his death was superintendent of Indian affairs, with headquarters at Saint Louis.

CLARKSBURG, W. Va., founded in 1785 and named for George Rogers Clark, is the

county seat of Harrison County, ninety-seven miles southeast of Wheeling, on the Baltimore & Ohio Railroad. Tributary to the city are ninety coal mines, and there is an abundant supply of natural gas. Population, 1920, 27,869; in 1930, 28,866, a gain of 3.6 per cent.

CLARK UNIVERSITY, an institution for postgraduate study, at Worcester, Mass., founded in 1887 by James Gilman Clark. Its special object is to afford educators and specialists the best opportunities for research along the lines in which they are interested. In accordance with the terms of a bequest by Mr. Clark, a collegiate department was organized in 1902, to be conducted upon the same general plan as that of the postgraduate department. The University publishes the *American Journal of Psychology* and the *Pedagogical Seminary*. Many important memoirs and monographs have also been published by its students and graduates. There are about forty instructors and 300 students, and the library contains 95,000 volumes.

CLASSIFICATION, in botany and zoölogy, the system of arranging plants and animals into groups according to similarities of structure. The principal divisions are explained in detail under the headings **FAMILY**, **GENUS**, **ORDER**, **SPECIES**, **VARIETY**.

CLAUDIUS, (10 b c.-a. d. 54), a Roman emperor, whose full name was **TIBERIUS CLAVDIUS DRUSUS NERO GERMANICUS**. He was the son of Clavius Drusus Nero, stepson of Augustus. He lived in privacy, spending his time in writing and studying, until the murder of Caligula, when he was dragged from his hiding place and proclaimed emperor (a. d. 41). His reign was marked by the embellishment of Rome and by successes in Germany and Britain. Latterly he became debauched and left the government largely to his infamous wife, Messalina, who with his freedmen committed the greatest enormities. He was poisoned by his fourth wife, Agrippina, the mother of Nero.

CLAXTON, PHILANDER PRIESTLEY (1862-), an American educator, born in Bedford County, Tenn. He received his degree from the University of Tennessee and did postgraduate work at Johns Hopkins University and in Germany. After serving successively as superintendent of schools at Kinston, Wilson and Asheville, N. C., he

became in 1893 professor of pedagogy in the North Carolina State Normal and Industrial College. In 1902 he became professor of education in the University of Tennessee, then for five years was United States Commissioner of Education. Afterward he went to the University of Alabama, to Tulsa (Okla.) as city superintendent of schools, and in 1930 to Clarksville, Tenn., normal school, as president.

CLAY, the name given to various earths, the most familiar variety being that used for making bricks and tile. But there are other and rarer varieties of great value, which many people do not identify as clay. Clay consists of silicate of aluminum, with small proportions of the silicate of iron, calcium, magnesium, potassium and sodium. All the varieties are characterized by being weighty, compact and hard when dry, but plastic when moist; smooth to touch; not readily diffusible in water, but when mixed, not readily settling in it. Their tenacity and ductility when moist and their hardness when dry have made clays from the earliest times the materials of bricks, tiles and pottery.

One of the rarest of the clays is **kaolin** (which see), a white clay with occasional gray and yellow tones; this is the purest. **Porcelain clay** is one of the best varieties. **Potter's clay** and **pipe clay**, which are similar but less pure, are generally of a yellowish or grayish color, from the presence of iron. **Fire clay** is a very refractory variety, always found lying immediately below the coal; it is used for making fire bricks and crucibles and for lining furnaces used in smelting iron and some other metals. **Loom** consists of clay mixed with sand, oxide of iron and various other foreign ingredients. Other varieties are **fullers' earth** (which see), **Tripoli** and **boulder clay**, the last a hard clay of a dark brown color, with rounded masses of rock of all sizes embedded in it, the result of glacial action.

The distinctive property of clays as ingredients of the soil is their power of absorbing ammonia and other gases and vapor generated on fertile and manured lands; indeed, no soil will long remain fertile unless it has a fair proportion of clay in its composition.

CLAY, HENRY (1777-1852), one of the greatest of American statesmen, who was named the "Great Pacifier" because of his sincere effort to avert war in the United

States over the slavery question. His unalterable views so influenced his career that he failed to attain the Presidency; he realized at last that the honor would never come to him, but he said, "I would rather be right than be President."

Clay was born in Ashland, Hanover County, Va., April 12, 1777. He received practically no education, but was able to begin the study of law and opened his first office at Lexington, Ky., in 1797. He soon became famous as a jury advocate and public speaker, and at the age of twenty-six was a member of the Kentucky legislature. In 1806-1807 and 1810-1811 he filled unexpired terms in the United States Senate although not having attained legal age to qualify as a Senator at the date of his first appointment. In 1811 he was chosen to the House of Representatives, where he was at once made speaker. Here he became prominent as an advocate of war and from his official position practically forced the War of 1812 upon the country. He acted as one of the American commissioners in the peace negotiations in 1814.

Clay was continuously reelected Speaker of the House until his retirement in 1821. Again he occupied that post when reelected to Congress in 1823. During his career in the House his most important act was doubtless the introduction of the famous Missouri Compromise of 1820 (see MISSOURI COMPROMISE). In 1824 he was an unsuccessful candidate for the Presidency against Crawford, Jackson and John Quincy Adams. No candidate had a majority of the electoral vote, and the contest was therefore sent to the House of Representatives, where Clay, being fourth in the list, was ineligible for election. He transferred his strength to Adams, and upon the latter's election Clay was appointed Secretary of State. This fact gave the basis for the charge of corruption between Adams and Clay, which, though unfounded, was used to the latter's political injury throughout his career. As chief of Adams' Cabinet he displayed considerable



HENRY CLAY

ability, but he lost his prestige in Congress through absence, and never regained it.

Clay was again elected to the Senate in 1831, became a bitter opponent of President Jackson, and was his competitor in the election of 1832, but was defeated. He again became conspicuous as pacifier in the nullification controversy of 1833, when, by his compromise tariff measure, he probably prevented a resort to arms. Throughout the rest of his career, Clay was one of the foremost orators in America, and though unsuccessful in his great ambition to become President, he was an acknowledged leader of the Whig party. He retired from the Senate in 1842, was defeated for President by Polk in 1844 and was defeated for the nomination by Taylor in 1848, but in the same year he was reelected to the Senate. From this time forward he devoted his efforts to allaying the sectional strife upon the slavery question, and he made his last great speech in the Senate in support of the Compromise of 1850. Though a man of strong convictions, Clay often sacrificed popular favor by seeking to win the support of all sections and factions, and thus gained the reputation of being vacillating and even insincere.

CLAYTON-BULWER TREATY, a treaty between Great Britain and the United States, concluded in 1850, by which both parties agreed to guarantee the neutrality of a canal through Central America, but not to exercise any control over the territory nor to erect any fortifications there. It was at this time that the Nicaragua Canal was proposed (see NICARAGUA CANAL). The United States made several attempts to have this treaty modified or abrogated, but the British government refused to concur, until 1801, when the Clayton-Bulwer Treaty was abrogated (see HAY-PAUNCEFOTE TREATY). The negotiators were Secretary of State John M. Clayton, for the United States, and Sir Henry Bulwer, special ambassador for Great Britain.

CLEARING HOUSE, a term which has become almost exclusively associated with the management of banks in large cities, but which, in a broad sense, means a place where the claims of several parties, regardless of the nature of their business, are adjusted.

In connection with the banking business the methods employed in a clearing house amply justify the title. In it all debits and

credits of the various member banks are "cleared" every day with minimum effort and slight expenditure of time.

How It is Conducted. Each member bank sends to a central office, which they call the clearing house, two representatives—a so-called delivery clerk and a settling clerk. In a large room each bank is assigned a desk. Upon arrival at the clearing house, usually about 11 A. M., the clerks from each bank deposit at the manager's table a ticket showing the aggregate amount due to them from other banks, as shown by checks which these clerks have brought with them. The manager enters this sum to the credit of the bank presenting the ticket. The checks which each set of clerks have brought with them are divided into bundles, each of which contain checks upon some other one bank. At a given signal the settling clerks seat themselves at their respective desks and the delivery clerks pass among them, delivering to each settling clerk bundles of checks drawn on the bank which he represents. When each settling clerk has received all the bundles of checks drawn against his bank he draws up a statement of the demands made upon him. The lists of all the settling clerks are then sent to the manager, who draws up a statement showing the amount which each bank owes to each of the other banks in the association. The checks against the banks are then returned to the banks by their respective clerks; the separate items are approved, and the debtor banks must pay to the creditor banks the amounts due.

If the clearing house did not exist, each bank would have to send its messengers directly to all other banks to settle balances; the cost would be excessive, for many hours daily would be required. Time would not permit the use of the mails to make the daily clearings.

The clearings of banks in large cities reach enormous proportions, the totals varying widely between years of prosperity and years of business depression. New York, as the financial center of the country, may clear as much as a billion dollars in one day. The total bank clearings in the United States in a year have been as high as 715 billions, and average well over 400 billions.

CLEAVAGE, *klev'aj*, the manner or direction in which crystallized substances regu-

larly split. The regular structure of most crystallized bodies becomes manifest as soon as they are broken. Each fragment presents the form of a small polyhedron, and the very dust appears under the microscope an assemblage of minute solids, formed according to some plan of crystallization. The directions in which such bodies thus break up are called their *planes of cleavage*. See CRYSTALLOGRAPHY; METAMORPHISM; STRATIFIED ROCKS.

CLEAVELAND, MOSES (1754-1806), a soldier in Washington's army, then in 1796 appointed as director and surveyor of the Connecticut Land Company's Western Reserve project. He took 52 settlers west, and at the mouth of the Cuyahoga River found a favorable spot for the establishment of the principal settlement. The new town was named in his honor; it became Cleveland, Ohio, but not until about 1830 was the spelling of the name changed. See WESTERN RESERVE.

CLEMATIS, *klem'a tis*, a genus of woody, climbing plants. The most common species, virgin's bower or traveler's joy, is conspicuous in the hedges both of England and the south of Scotland, first by its copious clusters of white blossoms and afterward by its feather-tailed, silky tufts attached to the fruits. There are about one hundred species of clematis, most of which are found in temperate climates. In North America about twenty species grow well. The most common of these is the virgin's bower, which resembles the European clematis both in its color and in its feathery pistils. A rarer species, found in a few locations, has large, single, purplish drooping flowers.

CLEMENCEAU, *kla'mahn so'*, GEORGES BENJAMIN EUGENE (1841-1929), a French statesman and journalist of radical views, called the "Tiger" because of his dauntless courage and fighting powers. For nearly half a century a storm center of French politics, he dominated the situation at the most critical period of the World War, and by rescuing his country from pacifist and enemy intrigues proved himself the "strong man" of France. Clemenceau was educated to be physician, and in the early part of his career he spent several years in the United States, teaching and practising medicine. While in America he married an American woman. Returning to France shortly before the outbreak of the Franco-

German War, he was elected mayor of the district of Marte in Paris, and in 1876 was chosen a Republican Deputy in the French Parliament. In that body his independence of action and vigor of speech made him a prominent figure nationally, and his reputation was further enhanced by his radical editorials in *La Justice*, a daily paper which he founded in 1880.

Clemenceau lost his seat in the Chamber of Deputies in 1893, and for about ten years labored for justice and democracy with a trenchant pen. He was one of the strongest leaders in the movement in behalf of Captain Dreyfus, founding a new paper, *L'Aurore* ("The Dawn"), to champion the cause of that wronged officer. In 1902, at the age of sixty-one, he was elected to the national Senate, from the department of Var, in 1906 was appointed Minister of the Interior and in 1906 was made Premier of France. Though his Ministry was defeated in 1909, Clemenceau continued to be a power in politics, and in 1913 he was instrumental in overturning the Briand Ministry. He also became editor of a radical paper, *L'Homme Libre* ("The Free Man"), in which, during the World War, he unsparingly criticized the government for its vacillation and weakness.

In October, 1917, when the cause of the allies seemed in danger of disaster, Clemenceau was again called to head the Cabinet. Traitors were brought to trial, intrigues were crushed, and the nation's weakened morale was strengthened. The manner in which the people rallied and the army fought its way to victory in 1918 is told in these volumes in the article *WORLD WAR*.

It is a remarkable thing that Clemenceau should have been Premier of France when Germany surrendered. After the Franco-German War he had signed a manifesto against the cession of Alsace-Lorraine, and at the close of the World War he said, "The redemption of Alsace-Lorraine has been the goal of my life." At the peace conference which began sittings in January, 1919, the aged Premier was made chairman. In January, 1920, he was a passive candidate for the Presidency of France, but was defeated by Deschanel. Notwithstanding his great age he published in 1919 *The Strongest*, and in 1920, *In the Evening of My Thought*.

Clemenceau was not a Socialist, but he believed in radical social legislation and gov-

ernment ownership of monopolies. He represented that versatility characteristic of nearly all French intellectuals, and was not only a political leader but a novelist, dramatist, philosopher and essayist.

CLEMENS, klem'ēn̄s, SAMUEL LANGHORNE (1835-1910), best known as **MARK TWAIN**, was probably America's most beloved humorist. His writings have delighted old and young for a generation, and are continuing in their popularity. Clemens was born at Florida, a little hamlet in Northeastern Missouri, about fifty miles west of the Mississippi, November 30, 1835. His early education consisted of the limited training he could then get in this small country town and at thirteen years of age he entered a printing office. After becoming an expert compositor he worked for short periods of time in Saint Louis, Philadelphia, New York and other places. In 1851 he gave up his work in printing offices and went on a Mississippi steamboat as apprentice, where in 1857 he became a pilot. Here he met with a great variety of experiences which later he used to much advantage in writing the series of highly entertaining chapters, which now make his book *Life on the Mississippi*. Here, too, he must have originated his pen name, for "By the mark, twain" was the cry used by the man who sounded the depth of the water to tell the pilot that it was two fathoms deep. It is said that Captain Isaac Sellers had signed articles *Mark Twain* in the New Orleans *Picayune* previous to the time Clemens assumed the name, but it now belongs completely to the latter and thousands upon thousands of readers know the genial humorist by no other. When the Civil War broke out navigation on the Mississippi ceased and Mr. Clemens lost his occupation as pilot. For some little time he was a member of a company of Confederate sympathizers organized near his home, but he never was engaged in active war service. About this time his brother had been appointed Territorial Secretary of Nevada and Mr. Clemens went



out with him to Nevada City, where for a time he was interested in mining. In 1862, however, he became a reporter for a Virginia City paper, and several years later he removed to California, where he was a reporter for the *Morning Call*. In 1866 he went to the Sandwich Islands, and upon his return began his career as lecturer, attracting considerable attention. The publication in 1867 of the *Jumping Frog of Calaveras County* increased his reputation, and *Innocents Abroad*, an account of an excursion through Egypt and the Holy Land, won him international fame. In 1870 he married, and after editing for two years the *Buffalo Express*, settled in Hartford, Conn. He joined a publishing firm of New York in 1884, but after a few years of success the firm became bankrupt, and Clemens, to meet his heavy losses, traveled as a lecturer, meeting with the greatest success. For some years after 1890 he lived in Europe.

Besides the works mentioned above, Clemens is noted chiefly for his *A Connecticut Yankee at King Arthur's Court*, *Pudd'n-head Wilson*, *The Prince and the Pauper*, the *Adventures of Tom Sawyer* and the *Adventures of Huckleberry Finn*. The last two, especially, are of their kind unrivaled, not only because they are full of Clemens's genial humor, but because they give truthful, vivid pictures of the free life of a boy along the Mississippi River.

CLEMENT, *klem'ent*, the name of fourteen Popes, of whom the following are of greatest importance:

Clement I, reputed to have been the third bishop of Rome after Peter, lived in the first century A. D. He was greatly venerated in his day, and a letter which he addressed to the Church of Corinth was at one time regarded as a part of the Bible.

Clement VII, a member of the Medici family, occupied the Papal chair from 1523 to 1534. He was the Pope who refused to recognize Henry VIII's divorce of Catherine of Aragon.

Clement VIII, a man of great piety and learning, was Pope from 1592 to 1605. He helped to bring about a reconciliation between France and Spain, and smoothed out the controversy between Henry IV of France and the Church.



Clement XIV, Pope from 1763 to 1774, founded the Clementine Museum in the Vatican. He was a zealous supporter of the Jesuits, but because of this attitude he aroused opposition in many countries. He was the last of the Popes to bear the name Clement.

CLEOPATRA, *kle o pa'tra* (68-31 B. C.), queen of Egypt, distinguished as **CLEOPATRA VI** from others who bore the name. She was one of the most famous rulers of all time—not because she was crowned with virtues that made her beloved of her people, or for great monuments to her genius or for strength of character which inspired the nation, for she is not known for any of these qualities. She was a queen of great personal attraction, but lacked the quality of wondrous beauty possessed by some famous women of history. Against her blandishments no man except Augustus was able to stand, she led the greatest according to her fancy. Pascal, who lived from 1623 to 1662, said of her, "If the nose of Cleopatra had been shorter, the whole face of the earth would have been changed."

When she was seventeen years old her father died, leaving her as joint heir to the throne with his eldest son, Ptolemy; when she was deprived of her part in the government she won Caesar to her cause and was reinstated by his influence. In a second disturbance Ptolemy lost his life, and Caesar proclaimed Cleopatra queen of Egypt, though she was compelled to take her brother, the younger Ptolemy, as colleague. Caesar continued some time at Cleopatra's court. By poisoning her brother, she became sole possessor of the regal power, took the part of the triumvir in the civil war at Rome and after the Battle of Philippi went to do homage to Antony at Tarsus. Their meeting was celebrated by splendid festivities; she accompanied him to Tyre and was followed by him on her return to Egypt. After his conquest of Armenia he again returned to her. On the commencement of the war between Augustus and Antony, the latter lost a whole year in festivals and amusements with Cleopatra at Ephesus, Samos and Athens, and when at last the fleets met at Actium, Cleopatra suddenly took to flight, with all her ships, and Antony immediately followed her. Augustus advanced on Alexandria and proved himself proof against Cleopatra's remarkable fascinations. Believing Cleopatra to be dead, Antony threw himself on his sword, and shortly afterward

Cleopatra killed herself, by applying an asp to her arm, to escape the ignominy of being led in a Roman triumph. Such is the traditional account of her death.

Cleopatra bore a son to Caesar, who was called Caesarion. She bore three children to Antony. In A.D. 40 the Ptolemy line became extinct through the slaying of the last of Cleopatra's descendants by the Emperor Caligula.

She has been given a romantic setting through the centuries, for writers and artists have found in her person and career abundant material with which to create an atmosphere of profound interest.

CLEOPATRA'S NEEDLES, the name given to two Egyptian obelisks, formerly at Alexandria; one of them is now in New York, the other in London. They are made of rose-red granite and were originally erected by Thothmes III in Heliopolis, being dedicated to the god Ra, or the Sun. They were taken to Alexandria shortly before the commencement of the Christian Era and remained there until 1877, when they were presented to Great Britain and the United States by the Khedive Ismail Pasha.

The New York obelisk is sixty-nine feet high and weighs 200 tons. The sides are covered with inscriptions of Thothmes III and Rameses II. In the dry and hot air of Egypt the obelisks stood undamaged for 3,000 years, but in the atmosphere of New York and London they began to disintegrate. A preservative fortunately has been found to apply to the stone.



CLEOPATRA'S
NEEDLE
In Central Park
New York



steadily increased, and at his death he was ranked as one of the greatest figures of his time.

Cleveland was born in Caldwell, N.J. The death of his father, a Presbyterian clergyman, compelled young Cleveland to earn his own living, and he became a clerk and assistant teacher in the New York institution for the blind. In 1855 he started west, but stopped at Buffalo, where he was admitted to the bar in 1859. In 1863 he became assistant district attorney of Erie County, and he was made sheriff in 1870. In 1881 he was elected mayor of Buffalo on the Democratic ticket, though the city was strongly Republican, and his efficient administration led to his nomination and election as governor of the state by a remarkable plurality. His career as governor was marked by exceptional ability, fearlessness and honesty. He was nominated for President at the national Democratic convention held in Chicago in 1884, and was elected over Blaine, Republican, by a small plurality.

As President he made extraordinary use of the veto power to curb unworthy legislation, especially private pension bills, and boldly advocated a reduction in the tariff. In 1888 he was again Democratic candidate for President, but he was defeated by the Republican candidate, Benjamin Harrison. He then removed to New York and practised law. On June 2, 1886, he had married, at the White

CLEVELAND, STEPHEN GROVER (1837-1908), an American statesman and President, the only chief executive of the United States who has served two terms not in succession. His career as President was not always calm, he antagonized his own party on numerous occasions, and history has justified his course. After leaving office his strength with the people



GROVER CLEVELAND

First Administration of Grover Cleveland

- I. THE PRESIDENT
 - (1) Birth
 - (2) Parentage
 - (3) Education
 - (4) Public career
 - (5) Character
 - (6) Death
- II. GOVERNMENTAL AFFAIRS
 - (1) Important laws
 - (a) Contract labor law
 - (b) Act in regard to the Presidential succession, 1886
 - (c) New Anti-polygamy Act
 - (d) Chinese Exclusion Act
 - (e) Rivers and Harbors Bill
 - (f) Interstate Commerce Act,
 - (1) Causes
 - (a) Granger movement
 - (b) Discrimination by railroads
 - (1) Rates
 - (2) Facilities
 - (c) Growing power of railroads over other industries
 - (2) Its provisions
 - (a) Forbade pooling
 - (b) Discrimination and rebates illegal
 - (c) Required publicity of rates
 - (d) Higher charge for short haul than for a long haul illegal
 - (e) Established commission to investigate and to punish offenders
 - (g) Electoral Count Act
 - (1) To avoid contested elections
 - (h) Repeal of the Tenure of Office Act
 - (2) Other affairs
 - (a) The attempt to reduce the tariff
 - (1) Mills' Bill
 - (b) President's use of the veto
 - III. LOCAL AND INTERNAL AFFAIRS
 - (1) Dedication of the Statue of Liberty
 - (2) Organization of the American Federation of Labor
 - (3) Deaths of many prominent men
 - (a) Grant
 - (b) McClellan
 - (c) Hancock
 - (d) Tilden
 - (e) Logan
 - (f) Sheridan
 - (g) Conkling
 - (h) Arthur
 - (4) Haymarket Riot, 1886
 - (5) Charleston Earthquake, 1886
 - IV. ELECTION OF 1888
 - (1) Candidates
 - (2) Tariff the issue

Questions

Where was Grover Cleveland born?
 How old was he when he became President?
 What public offices had he held?
 What was the Contract Labor Law?
 When was the act regarding the succession to the presidency passed?
 Who stands next in order to the Vice-President?
 What were the provisions of the new Anti-polygamy Act?
 What were some of the causes of the Interstate Commerce Act?
 What did the law provide?
 What was decided by the Electoral Count Act?
 What executive department was established during this administration?
 What great statue was dedicated in 1886?
 What great labor organization was founded in 1887?

Second Administration of Grover Cleveland

I. THE PANIC OF 1893

- (1) Causes
 - (a) Agricultural depression
 - (b) Reckless financing
 - (c) Speculation in Argentine securities
 - (d) Financial crisis in Europe
- (2) Incidents
 - (a) Currency at a premium
 - (b) Clearing House Certificates issued
 - (c) Bank and commercial failures
 - (d) 22,000 miles of railway in hands of receivers
- (3) Results
 - (a) Industrial chaos
 - (1) Depression and inactivity in business
 - (2) Strikes and lock-outs
 - (a) Caused by reduction of wages or no work
 - (1) Caused by closing of the Pullman shops
 - (2) Rioting and destruction of property
 - (3) Governor Altgeld of Illinois refused to call out militia
 - (4) President Cleveland sends Federal troops to protect the mails
 - (b) Repeal of the Silver Purchase Act
 - (e) Sale of gold bonds

II. GOVERNMENTAL AFFAIRS

- (1) Domestic
 - (a) Wilson-Gorman Tariff Act
 - (1) Originally a Democratic measure
 - (2) Changed in the Senate

- (3) Allowed to become law without the President's signature
- (b) Income Tax
- (c) Admission of Utah, 1896
- (d) Extension of Civil Service
- (2) Foreign
 - (a) Hawaii
 - (1) President withdrew treaty of annexation from Senate
 - (2) Appointed special commissioner to investigate
 - (b) Bering Sea controversy settled
 - (c) Treaty with China
 - (1) Beginning of the "open-door" policy
 - (2) Integrity of China guaranteed
 - (d) President acts as arbitrator
 - (1) Between Brazil and Argentine Republic
 - (2) Colombia and Italy
 - (3) Brazil and Italy
 - (e) Venezuela dispute

III. LOCAL AND INTERNAL AFFAIRS

- (1) World's Columbian Exposition
- (2) Colorado grants suffrage to women

IV. ELECTION OF 1896

- (1) Candidates
- (2) Issues
- (3) Result

Questions

What were the causes of the great railway strike?

On what grounds did the President send Federal troops to Chicago?

Explain why the panic necessitated the repeal of the Silver Purchase Act.

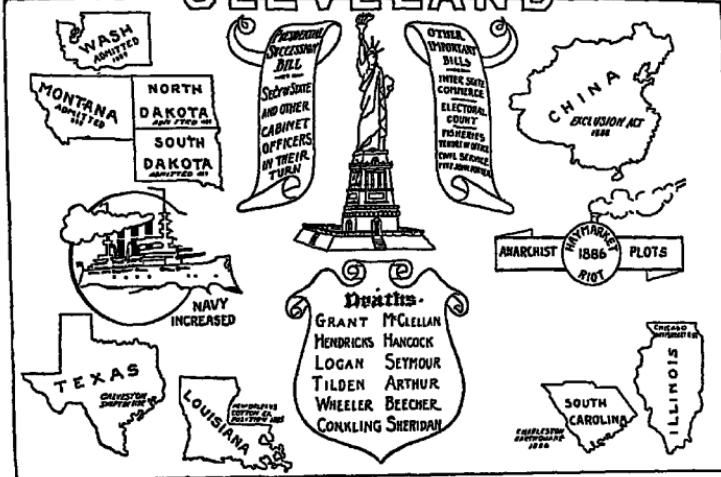
What is an income tax?

What state was admitted in 1896?

When was the Bering Sea controversy settled?

What was the President's attitude toward the annexation of Hawaii?

What event did it commemorate?

FIRST
1885TERM
1889

House, Miss Frances Folsom, daughter of his former law partner. He was again nominated by his party for President in 1892, in spite of opposition from his own state, and was elected. His second term was memorable because of a financial panic, which he strove

to avert by the repeal of the Sherman silver purchase law and by the issue of government bonds for the replenishment of the treasury's gold reserve; for the passage of the Wilson tariff law, which, though reducing some duties, was deemed so ineffectual by the

GROVER CLEVELAND'S SECOND 1893 ADMINISTRATION 1897

ADMISSION OF UTAH
TO THE UNIONCHINESE TREATY
1894

VENEZUELA

VENEZUELA CONTROVERSY



COLUMBIAN EXPOSITION



RAILWAY STRIKE



BOND ISSUE



REBELLION IN CUBA



BEARING SEA CONTROVERSY

President that he would not sign it, and for the notable message from the President to Congress, in accordance with which steps were taken to compel England to arbitrate her controversy with Venezuela.

After his retirement from the Presidency, Mr. Cleveland did not reenter public life. When insurance scandals were disclosed in New York state Cleveland was called as a trustee for vast insurance interests, and his acceptance of the trust created a feeling of confidence that was a splendid tribute to him. He delivered each year a series of lectures in Princeton University, was elected a trustee of the University soon after his retirement from the Presidency, and took an active interest in its affairs. The tower of the new graduate school of Princeton is called the Cleveland Memorial Tower, in his honor.

Mrs Cleveland, the former White House bride, was married in 1913 to Professor Thomas J. Preston, Jr., of Princeton University.



1930, 900,420.

General Description The city is built upon slightly rising ground which is 689 feet above sea level, and extends along the lake front for a distance of twelve miles, its greatest extent inland is about six miles, and its area is 73 square miles. The Cuyahoga River divides the city into two unequal parts, the eastern and the western, the latter and smaller of which is known as West Cleveland. This stream flows through a deep and somewhat broad valley, whose surface is considerably below the remaining portions of the city, and this valley is occupied by freight depots, factories and lumber yards.

The Cuyahoga River and valley are crossed by two noted bridges, the Lorain Central Viaduct, and the Detroit-Superior High Level Bridge. The streets are broad and well paved, and many of them are shaded with maples and elms, which add to the beauty of the city and have given it the name *Forest City*. From the Public Square the streets extend in all directions, but the longest thoroughfares in the lower part of the city are parallel to the lake shore, while farther inland they are nearly east and west. Crossing these are streets extending from the lake to the southern portion of the city. In nearly all sections the streets cross at right angles.

Parks and Boulevards. Of the many beautiful streets of the city, the finest is Euclid Avenue, a boulevard extending eastward from the Public Square. It is from eighty-three to ninety feet in width, and is lined with beautiful homes surrounded by spacious lawns. Of late years the lower part of this boulevard has been rendered less attractive by the encroachment of the business section. Other attractive thoroughfares include Lake Shore, East and Clifton boulevards, Magnolia Drive, Bellflower Road and Juniper Drive. The total park area of Cleveland is over 2,670 acres. Rockefeller Park, of 273 acres, is a long, narrow stretch of green connecting Wade and Gordon parks, the former overlooking the lake, and the latter situated at the mouth of Doan Brook, which flows into the lake. Rockefeller Park occupies the valley of the Doan, and was presented to the city by John D. Rockefeller. Brookside Park possesses a zoological garden, and Wade Park a splendid monument to Perry, hero of the battle of Lake Erie. Among other parks are Newbern, Forest City, Lincoln, Garfield and Woodland Hills.

Mention should be made of beautiful Lakeview Cemetery, notable as the burial place of President Garfield. His body lies in a crypt beneath a splendid memorial, worthy to be compared with the tomb of General Grant, in New York. This structure, 165 feet high, is of Ohio sandstone and contains in relief sculptures representing incidents in Garfield's life. The interior is in the form of a chapel decorated with symbolical friezes and containing a marble statue of Garfield in the center. The monument cost about \$180,000.

Public Buildings. The principal public edifices of Cleveland are grouped about a central plot of ground, in accordance with a "city beautiful" plan submitted by a commission which included Daniel H. Burnham. This group consists of the Federal building, courthouse, city hall, public library, public auditorium, all representing the finest ideals of modern architecture. At each end of the plot will be erected an imposing Court of Honor to connect the buildings. Cleveland is also noted for its many arcades, buildings erected about a central court with tiers of stores and offices having balcony fronts. Among other buildings of special note are the Chamber of Commerce, Art Museum, the Western Reserve Historical Society Building, the Terminal Tower building (52 stories) and the Union Trust building. There are nearly 410 churches, some of imposing architecture, and a number of handsome hotels.

Institutions. Cleveland was one of the first American cities to establish a free high school, and its public school system has kept pace with the development along other lines. There are besides, numerous private, parochial and business schools, and several colleges and universities. These latter include Western Reserve University (which see), with its departments of Adelbert College, Women's College and various professional schools; Case school of Applied Science, John Carroll University, the University School, and many professional schools. The public library has 350,000 volumes, and there are besides various college, law and historical libraries. In Severance Hall are held the concerts of the Cleveland Symphony Orchestra, a musical organization of national reputation.

Commerce and Industry. Among the Great Lakes ports Cleveland ranks next to Chicago in amount of freight tonnage entering and clearing its harbor, and it is also an important railway center, being served by the Cleveland, Cincinnati, Chicago & Saint Louis, the Baltimore & Ohio, the Erie, the New York Central, the New York, Chicago & Saint Louis, the Pennsylvania and the Wheeling & Lake Erie roads. The natural harbor at the mouth of the Cuyahoga has been improved by dredging operations and the construction of a huge breakwater, and a ship-channel 200 feet wide has been formed by the building of two parallel piers which extend out into the lake for a distance of

1,500 feet. The city has eighteen miles of river frontage and over five miles of docks. The Cleveland Municipal airport of 1,100 acres affords facilities for air mail and passenger transport to all parts of the country.

As a manufacturing center Cleveland ranks first in the state, third among the cities on the Great Lakes, and fifth among those of the entire country. The iron and steel industries have been especially developed because of the city's location between the coal, iron and oil regions of Western Pennsylvania and the Lake Superior iron and copper-ore districts. In the manufacture of steel ships, wire, bolts, nuts, machinery, etc., it is among the leading cities in the United States, and in the production of women's suits and coats it is surpassed only by New York. Cleveland is also one of the largest fresh-water fish markets in the country, and a center for the manufacture of automobile parts and accessories. Other important industries include slaughtering and meat packing, oil refining and the manufacture of electrical apparatus.

History. The first settlement on the site of Cleveland was made in 1796 by a party of surveyors under Moses Cleaveland, whose name was given to the new town, the present spelling being officially adopted in 1831. In 1809 Cleveland became the county seat of Trumbull County, which had been organized in 1800, but in 1814 it was incorporated as a town of Cuyahoga County, a subdivision of the original county. By 1820 the town had a population of 600, and boasted a bank and a newspaper. After the completion of the Ohio Canal the place grew rapidly, and in 1836 received a city charter. In 1921 the city manager form of government was adopted by Cleveland, but was discontinued in 1931 in favor of the mayor-council system.

CLICK BEETLE, SPRINGING BEETLE and **SKIP JACK**, names given to a family of beetles because of their peculiar behavior. If the click beetle is touched or alarmed, he folds up his legs and feigns death. If placed upon his back, he will lie quietly for a moment, and then by a sudden jerking motion, accompanied by a chinking sound, he will throw himself some little distance in the air, and, landing on his feet, will run away. There are about 500 species of click beetles in North America alone. The largest and most conspicuous is the *eyed elater*, which is grayish-black in color and has two

large black spots, like eyes, on the sides of its thorax. These beetles usually live singly in flowers, grass and decaying wood. The destructive larvae are known as *wireworms*. Some of the tropical chick beetles are luminous, and one species carries two glowing spots on each side of its thorax. These beetles are sometimes worn as ornaments



CLIFF DWELLERS, one of the very earliest of American races, who left the evidences of their existence in the homes they built and inhabited in cliffs and rocks. They preceded the Pueblo Indians in the southwestern part of what is now the United States, in New Mexico and Arizona.

The cave dwellings were frequently built at the cost of great labor, and were closed and strengthened by stone walls, while their cliff houses were veritable fortresses, to which the inhabitants retreated when menaced by serious danger. Any situation pleased them, provided it gave hope of security. These dwellings have even been found hollowed in layers of volcanic ashes, hardened by time, while all around, pieces of cut silex and fragments of pottery attest the long sojourn of the people. One "cliff palace" had a length of 421 feet, contained 127 rooms, capable of affording shelter to 1,500 persons. The dwellings were constructed either of assorted stones, held together with moistened clay, or of adobe or sun-dried bricks. The circular ruins contain a number of small cells, and a building, often half-subterranean in the center, which the Spaniards called an *estufa*. Some contend that these *estufas* were the council chambers, where the principal men of the tribe assembled; while others hold that they were meant to keep the sacred fire, which is even to-day an object of veneration with the Indians. Sometimes the homes of the Cliff Dwellers were at a great altitude, being as high as 800 feet above the level of a river.

The entire San Juan valley is strewn with the ruins. There is one long, narrow structure running in front of a cave 200 feet wide at the mouth, where windows eighteen inches square are the only means of entrance

Recent explorations have brought to light a small number of mummies in a fair state of preservation. Side by side with the bodies, weapons, utensils and ornaments were found. Agriculture seems to have been more perfect among the inhabitants of Arizona than among those of New Mexico.

CLIMATE, the average condition of the atmosphere, with respect to temperature, humidity, rainfall, wind and storms. Weather is the atmospheric condition for a short period of time, as a day or a week, but climate is the condition of weather for a long period of years. Weather is constantly changing; but there have been no marked changes of climate for many centuries.

The chief determining factors of climate are latitude, altitude, the inclination of the earth's axis to the plane of its orbit, distance from the sea and prevailing winds. Of all these, latitude is the most important factor, since upon it, more than upon any other cause, depends the temperature of a region, which is the most important climatic feature. The temperature is the highest in the equatorial regions and gradually diminishes toward the poles. Were the surface of the earth perfectly smooth, there would be little or no variation in temperature for places having the same latitude, but the general effect produced by the different angles at which the sun's rays strike the earth between the equator and the poles is modified by numerous local conditions. Chief among these is altitude, and this, next to latitude, is the most important agency that affects climate. The average temperature of a place falls one degree for every 300 feet in ascent above sea level. In other words, 300 feet in altitude will produce the same variation in temperature as from thirty to sixty miles in latitude, according to the location of the place. Hence in the mountainous regions of the tropics are all grades of climate from that of the torrid zone to that of the arctic regions.

Water is a great equalizer of temperature. It warms and cools much more slowly than the land. Hence, regions located in the vicinity of large bodies of water, such as those on the sea coast or near the Great Lakes, have a more equable temperature than those situated far inland. Winds blowing over the oceans acquire the same temperature as the water. Hence in the temperate

regions countries situated on the western coasts of the continents usually have a warmer climate than those on the eastern coasts in the same latitude, since the general direction of the winds is westerly. This is seen very clearly in comparing the temperature of places having the same latitude on the eastern and western coasts of North America. In each instance the higher temperature on the western coast is due to the prevailing westerly winds which have been warmed by blowing a long distance over warm marine currents. A similar contrast exists between the eastern coast of North America and the western coast of Europe.

Mountain ranges influence rainfall and winds; hence, they are important factors in determining the climate of certain localities, as that of the Great Central Plain in North America. This region is situated between the Appalachian Mountains on the east and the Rocky Mountains on the west. The prevailing winds are from the north or the south; hence, all of the interior of North America is subject to sudden changes of temperature, since the north wind causes a fall and the south wind a rise in temperature. In Europe the comparatively low western coast allows the warm winds from the Atlantic to blow over a large area, hence, that portion of the continent, though far north, has a comparatively warm climate. The Alps form a barrier which prevents these winds from blowing over the countries to the south, so that these countries are wholly under the influence of the warm winds blowing across the Mediterranean; hence, Spain and Italy have a warmer climate than portions of the United States in the same latitude.

Climate is the chief factor in determining the animal and vegetable life and the character of civilization of any locality. While the largest land animals and the most luxuriant vegetation are found in the tropics, it is within the temperate regions that the most intelligent and useful of the lower animals and the most valuable plants have developed. It is also within the north temperate region that the great nations of civilization have originated and reached their highest stage of enlightenment. See METEOROLOGY; WEATHER BUREAU.

CLINTON, DEWITT (1769-1828), a leading statesman of his time and one of the most famous of the governors of New York,

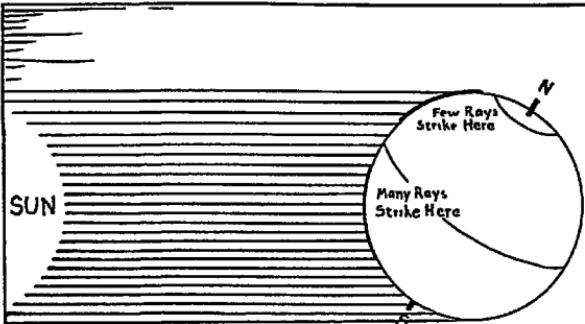
whose name is inseparably connected with the construction of the Erie Canal. He was born in Connecticut, but was educated for the law in New York and in that state he made his home. Clinton was admitted to the bar in 1788, in 1797 was elected to the legislature, the next year was a member of the senate of the state of New York and in 1801 was elected United States Senator. For twelve years, with two short intervals, he was mayor of New York. He was again member of the senate of New York from 1803 to 1811, and was lieutenant-governor of the state for two years. In 1812 he was defeated by Madison for President of the United States. In 1817 he was chosen governor of the state and was reelected three times. During his third term, in 1825, he officiated at the opening of the Erie Canal, thus witnessing the completion of a work to whose promotion he had devoted the best years of his life, and with which his name will be inseparably connected. See ERIE CANAL; NEW YORK STATE BARGE CANAL.

CLINTON, GEORGE (1739-1812), an American soldier, statesman and Vice-President of the United States. He served in the last French and Indian war, in 1775 was a delegate to the Continental Congress and was appointed a brigadier-general in the Continental army in 1777. He was the first governor of the State of New York, serving from 1777 till 1795 with exceptional ability. Clinton was of great service to the colonial cause, through his influence over the Indians. He opposed the Federal Constitution on account of its centralization of power. He was again chosen governor in 1801, and three years later was elected Vice-President, which office he held until his death.

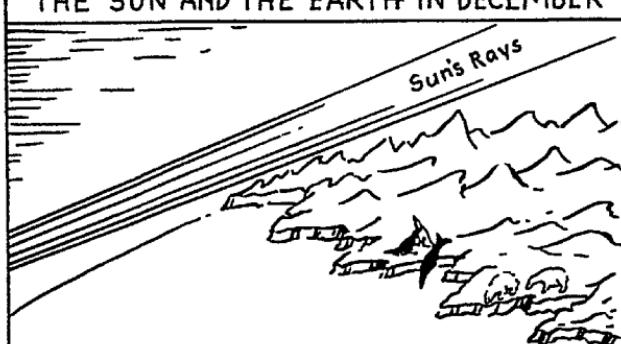
CLINTON, HENRY, Sir (about 1738-1795), a British major-general who arrived in Boston in 1775. He served at Bunker Hill, was second in command in the movements that compelled the Americans to evacuate New York in September, 1775, and was left in command of that city in the summer of



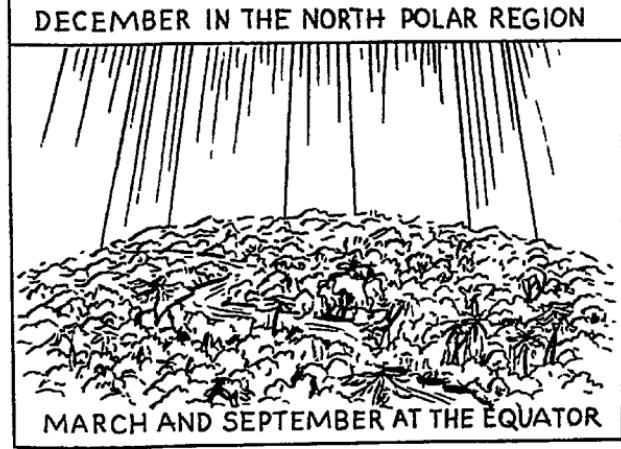
DEWITT CLINTON



OTHER
TEMPERING
FACTORS



VARIATIONS
IN
ALTITUDE



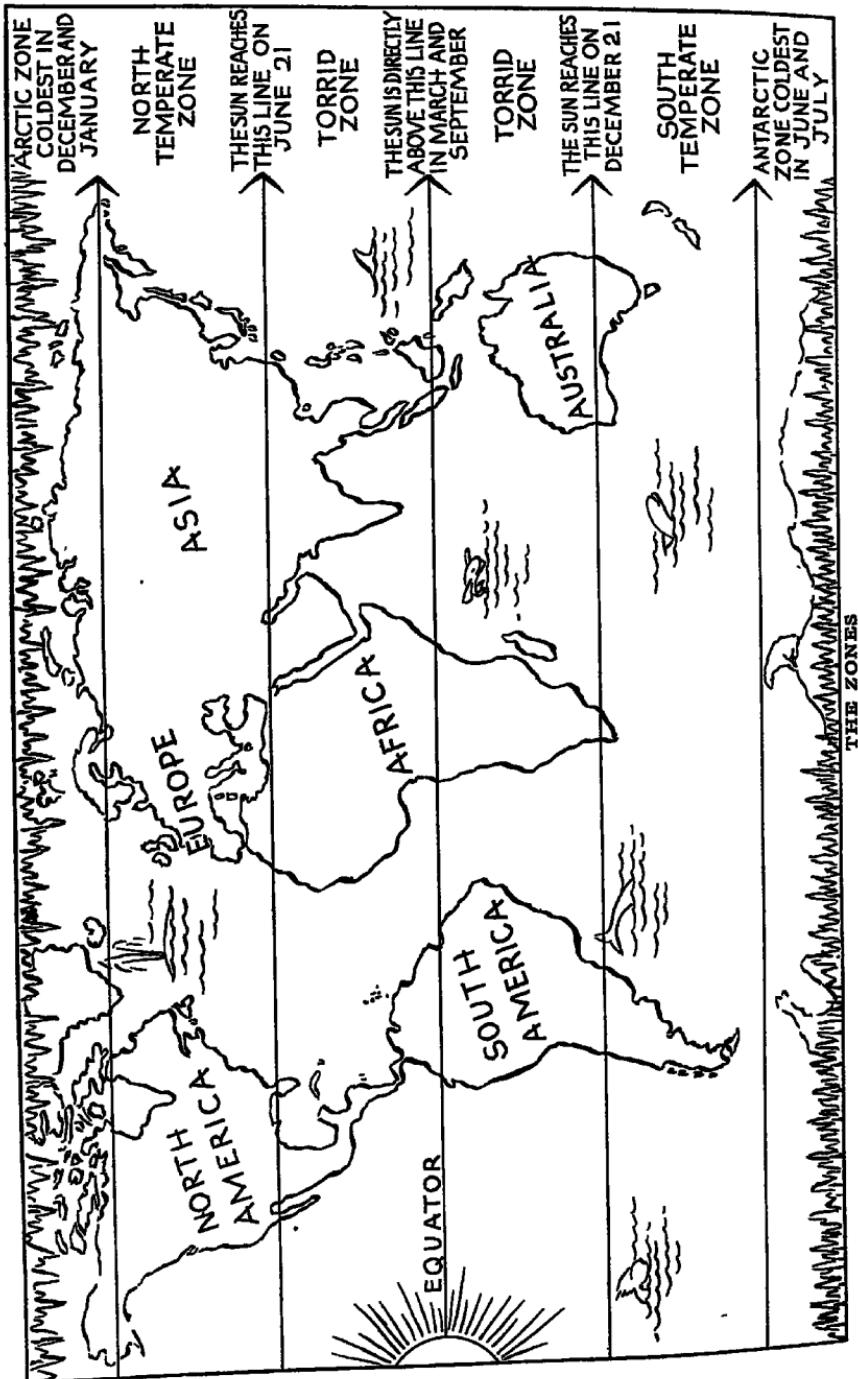
LARGE
EXPANSES
OF WATER-
OCEAN
CURRENTS



MARCH AND SEPTEMBER AT THE EQUATOR

STRONG
PREVAILING
WINDS

SUN RAYS HEATING THE EARTH



1777. He stormed Forts Clinton and Montgomery, and was appointed commander in chief of His Majesty's forces in America, with the rank of lieutenant-general. In June, 1778, he evacuated Philadelphia, and on his retreat through New Jersey he fought with Washington at Monmouth. He went to South Carolina in December, 1779, and captured Charleston in the spring of the following year. In October, 1781, he set sail for Chesapeake Bay with a large force to aid Lord Cornwallis, but learned that Cornwallis had surrendered, and thereupon he returned to New York. In June, 1782, he returned to England.

CLINTON, Iowa, founded in 1835 and named for DeWitt Clinton, is the county seat of Clinton County, located on the Mississippi River, 138 miles west of Chicago, on the Chicago & North Western and on the Chicago, Milwaukee, Saint Paul & Pacific, the Chicago, Burlington & Quincy, and the Chicago, Rock Island & Pacific railroads. The North Western machine shops are located here, and that road also maintains large stockyards. The manufactures include lumber, sash, doors and blinds, locks, machinery, internal combustion engines, furniture and other articles. Wartburg College, Mount Saint Clare Academy and Our Lady of Angels Seminary provide opportunities for higher education. Population, 1920, 24,151; in 1930, 25,726.

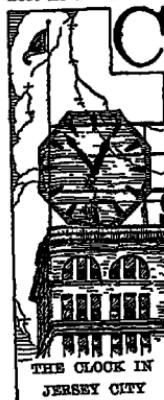
CLISTHENES, *kis'the nees*, an Athenian statesman who lived about 500 B. C. He belonged to a notable family, and in early manhood acquired great influence. It was Clisthenes who prevailed upon Athens to adopt ostracism (which see), and the city later turning against him applied it to himself. His great service to his country was in the nature of reforms in the constitution, making it more democratic.

CLIVE, ROBERT, BARON OF PLASSEY (1725-1774), an English general and statesman, and one of the greatest Britons in Indian history. He went to India as a clerk in the service of the East India Company, and when in 1747 war broke out in India between the French and English he joined the army. By his capture of Arcot and his defense of it against a greatly superior force of French and natives in 1751, he won a very favorable reputation, and this was heightened by his future successes over the

French. In 1753 he sailed to England to recover his health, and he was received most cordially.

Two years later he was back in India, and he was in the same year placed in command of the expedition sent to Bengal. He took Calcutta and defeated the nawab of Bengal in a battle at Plassey, thus establishing English supremacy in India. He placed on the throne of Bengal a general of the defeated nawab, and through him he became possessed of great wealth. On his second return to England in 1760 he was accorded many honors, but he was sent back to India to straighten out the affairs of the East India Company. This he accomplished in about eighteen months. Returning to England, he was met with the accusation of having abused his power to gain wealth, and an investigation was made. His complete acquittal followed, but the disgrace of the accusation so preyed upon his mind that he committed suicide.

CLOA'CA MAX'TIMA, the great sewer at Rome, built about 2,500 years ago. A portion of it is still in use, and it may be seen under the Roman Forum and where it empties into the Tiber. It is about thirteen feet in width and depth.



CLOCK, a machine for recording the flight of time, measuring it in intervals of hours, minutes and seconds. It is a comparatively simple device; the necessary parts being a weight or spring, which furnishes the motive power; an escapement, which is connected with the pendulum or balance wheel; a train of wheels; a dial, and hands. The weight is attached to a cord, which is wound around a drum, to one end of which a large wheel is fastened. As the weight descends, the unwinding of the cord imparts motion to the train of wheels. The motion is regulated by a pendulum, which is connected with the escapement wheel, as shown in the illustration. As the top of the pendulum swings to the right, the tooth *A* of the escapement wheel escapes from the pallet *B*, while the tooth *C* is brought

against the pallet *D*. The ends of these pallets are so shaped that as the teeth of the escapement wheel are released by them, sufficient force is imparted to the pendulum to keep it swinging. The pinion of the escapement connects with cogs, usually called *leaves*, on a larger wheel, whose pinion connects with another large wheel, and so on until the necessary number of wheels is used to produce a rotation, once in twelve hours, of the wheel which carries the hour hand. Another wheel, carrying the minute hand, makes a complete rotation once an hour. The movement of the wheelwork is regulated by the vibrations of the pendulum. The clock can be made to run faster or slower by shortening or lengthening the pendulum; the pendulum of any common clock has a hand and screw below the bob for this purpose (see PENDULUM). The hands are attached to pivots, which pass through the dial, the pivot of the minute hand passing through that of the hour hand, so that each hand moves past the other without hindrance.

The striking part of a clock is entirely separate from the time-keeping part and is operated by a different weight or spring. It is, however, set in motion by a lever which is connected with the time-keeping part.

Invention of the Clock. Sun dials were the earliest instruments used for measuring time (see SUN DIAL). It is not known when the first attempts at clock-making were made, but there are accounts of such attempts as early as the seventh century. In the early part of the ninth century a clock was presented to Charlemagne, and in the following century one was given to Pope Sylvester II; but it is not known that these were clocks with wheels and a weight, like those of a later date. It is probable that the invention of the clock is due to the monks, who needed a timepiece which would enable them to discharge their various duties at stated periods. Clocks are known to have been in use early in the fourteenth century, and



some of them were quite elaborate. They not only marked the hours of the day, but they also indicated the course of the sun and moon and the ebb and flow of the tides. In the fourteenth century the first large clocks on steeples also appeared.

First Clocks in America. The first clocks used in the United States had no case, but they were fastened to the wall of the room near the ceiling, and the weights and pendulum were without protection. Later a case was added, which rested upon the floor and extended upward for six feet or more. For many years the works of all American clocks were of wood and were made entirely by hand. Finally, brass clocks replaced the wooden ones, and these at first were also made by hand, but later a die for casting the wheels from rolled brass plates was used. With the introduction of this invention, clock-making by machinery was inaugurated and machine-made timepieces took the place upon the market of those made by hand. The largest clock factories in the United States are in Connecticut.

Largest Clock in the World. Until recently the largest clock in the world faced New York harbor from a building in Jersey City, but it is now third in size. It was built for a soap company; the time can easily be read a mile away in New York City, for its face is 28 feet in diameter. The largest clock is now at the top of a hill a thousand feet high overlooking Santiago, Chile; its face has a diameter of 150 feet. The second largest is the Dow clock in Montreal, whose face is 60 feet across. The most famous clock is "Big Ben," in Parliament Building, London. See WATCH; ELECTRIC CLOCK.

CLOSED SHOP, a condition with respect to union labor which is explained in the article OPEN SHOP.

CLOTBUR. See COCKLEBUR.

CLOTH, a woven fabric, usually made of cotton, wool, flax or silk. But in tropical countries it may be made of the fiber of hemp, jute or other plants. Cloth is woven on the loom. The weaver uses two sets of threads, the *warp* threads, which are run lengthwise of the goods, and the *weft* or *woof* threads, which run across the warp. The *selvage* is the edge of the cloth, woven in such a manner as to prevent raveling. The warp takes various names; it is sometimes called the *foundation* or *back* of the goods, and the woof is often called the *filling*.

When one says that a piece of goods has a cotton back and a silk filling, he means that the warp is of cotton and the weft of silk. All-wool cloths have both the warp and the weft of wool, but most so-called woolens contain more or less cotton or other fiber. Worsted goods are made of combed wool that is well twisted.

The varieties of cotton cloth most extensively used are muslins, including sheetings and shirtings, as well as the finer goods of this name; also the cotton cambric, canvas, duck, dimity, gingham and calico. Satinette, tweeds, jeans and some cashmeres are made on a cotton warp with a weft of wool. Lowns, cambrics, Damascus sheetings and toweling are made of flax and are called linens. Cloth may be plain, like common muslin; twilled, like tweeds; piled, like velvet and plush; figured, like damask; mixed, like cheviot, and checked or striped, like gingham, according to the way in which the weft threads are woven into the cloth. The width of the cloth depends upon the number of threads in the warp; its fineness or coarseness depends on the size of the threads and their distance apart.

Related Articles. Consult the following titles for additional information:

Calico and Calico Printing	Linen
Cambric	Muslin
Canvas	Plush
Cotton	Fatigue
Crape	Shoddy
Crinoline	Silk
Damask	Velvet
Dimity	Weaving
Flannel	Woolen and Woolen Manufacture
Flax	Worsted
Gingham	

CLOTHES, Moth, MOTH, the name given to several small moths whose larvae (young) are destructive to woolen fabrics, feathers and furs. They not only feed upon the material, but the larvae use it in the construction of the cases in which they undergo the pupa stage. It is not easy to prevent the damage done by the clothes moths, but airing and sweeping closets frequently, and beating, brushing and exposing clothes to the sunlight will diminish the ravages. Tobacco, camphor, tarred paper, naphtha balls and cedar shavings seem obnoxious to the insects.

GLO'THO, one of the three *Fates* (which see).

CLOUD, a visible mass of particles of water in the air; a mass of condensed vapor; atmospheric moisture condensed as rain or snow; a fog high in the air. All the above

definitions apply to the somber or gorgeous masses which float menacingly or lazily overhead.

Victor Hugo characterized them in *The Vanished City* as "the only birds that never sleep." Shelley, in *The Cloud*, summarizes their beauty and utility in the following stately lines:

I bring fresh showers for the thirsting flowers,
From the seas and the streams,
I bear light shade for the leaves when laid
In their noonday dreams
From my wings are shaken the dews that waken
The sweet buds every one,
When rocked to rest on their mother's breast,
As she dances about the sun
I wield the scall of the lashing hail,
And I hiten the green plains under,
And then again I dissolve it in rain,
And laugh as I pass in thunder.

Clouds differ from fogs only in their height and degree of density. The average height of clouds is calculated to be two and



FIG. 1

one-half miles, thin and light clouds being much higher than the highest mountains; while thick, heavy clouds often touch low mountains, steeples and even trees.

Kinds of Clouds. Clouds differ much in form and character, but they are generally classified into four simple or primary forms:

(1) The *cirrus* (Fig. 1), so-called from its resemblance to a lock of hair, consisting of fibers which diverge in all directions. Clouds of this description float at a general height of from three to five miles above the earth's surface.

(2) The *cumulus* (Fig. 2), a cloud which assumes the form of dense convex or conical heaps, resting on a flattish base. It is called also the summer cloud. Under ordinary circumstances these clouds accompany fine weather, especially in the heat of summer.

They attain their greatest size early in the afternoon and gradually decrease toward sunset.



FIG. 2

(3) The *stratus* (Fig. 3), so named from its spreading out uniformly in a horizontal layer, which receives all its additions in volume from below. It belongs essentially to the night, and it is frequently seen on



FIG. 3

calm summer evenings after sunset ascending from the lower to the higher grounds, and dispersing in the form of a cumulus cloud at sunrise.

(4) The *nimbus*, or *rain cloud*, is recognized by its fibrous border and uniformly gray aspect. It is a dense cloud, spreading out into a crown of cirrus and passing beneath into a shower. It presents one of the least attractive appearances among clouds, but it is only when the dark surface of this cloud forms its background that the splendid phenomenon of the rainbow is exhibited in perfection (see FOG; RAIN; WIND).

The first three primary forms of clouds are subdivided as follows: 1, the *cirro cumulus*, composed of a collection of cirri, and spreading itself frequently over the sky in the form of beds of delicate snowflakes; 2, the *cirro stratus*, or *wane cloud*, so called from its being generally seen slowly sinking and in a state of transformation—when seen in the distance a collection of these clouds suggests the resemblance of a shoal of fish, and the sky, when thickly mottled with them, is called in popular language a

mackerel sky; 3, the *cumulo stratus*, or *twain cloud*, one of the grandest and most beautiful of clouds, consisting of a collection of large, fleecy clouds overhanging a flat stratum or base.

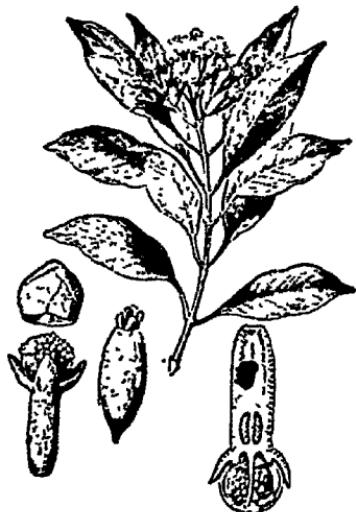
Cloud-burst, the name generally applied to an unusually heavy local rain. In the United States the term is restricted to a rain exceeding six inches and falling at the rate of ten inches, or more, per hour. Cloud-bursts cover only very small areas, usually but a few acres in extent. They cause the sudden overflow of streams and often convert dry channels into mountain torrents whose effect is very destructive.

CLOVER, *clo'ver*, one of the most attractive and useful plants, recognized by botanists as a member of the pea family. It will grow wherever grass will flourish. There are more than 300 species, of which some are weeds, but many are valued as food for cattle. Common red clover lives for two years and sometimes, especially on chalky soils, for three years. This is the kind most commonly cultivated, as it yields better than any of the other sorts. White clover is a most valuable plant for pasture over the whole of Europe, Central Asia and North America, and it has also been introduced into South America. The bee gathers much of its best honey from clover, for the blossoms are rich in nectar. It is important to know, too, that clover will not grow where there are no bumblebees, for they are necessary to its fertilization. Australia wished to grow clover, but they could not do so until the farmers imported bees.

Alsike, or *Swedish clover*, has long been cultivated in the south of Sweden, and now for over a score of years in other countries; it is strongly recommended for cold, moist, stiff soils. It resembles the common red clover in duration, stature and mode of growth. *Perennial red*, or *meadow*, clover much resembles the common red, but differs somewhat in habit, and the bright red flowers are larger and form a less compact head. Its produce is less in quantity and is not so nutritive as that of the common red. Clover is an excellent crop for exhausted lands, for the tubercles on the plant roots gather and store quantities of nitrogen, which go to restore the fertility of the soil.

CLOVES, *clo'vz*, the dried flower buds of a tree which was first found in the Molucca Islands, but which is now grown in

various warm countries, including, to some extent, the West Indies. These buds, in powdered form, are used as a favorite condiment in cookery, and the oil of cloves has its place in medicine. The odor of cloves is fragrant; the taste sharp, warm and bitter. The tree is a handsome evergreen, from fifteen to thirty feet high, with large elliptic, smooth leaves and numerous purplish flowers on jointed stalks.



CLOVE

Opened and unopened flower bud and a longitudinal section of bud

CLOVIS, (465-511), king of the Franks, succeeded to the throne in 481. In 486 he overthrew the Roman governor at Soissons and occupied the country between the Somme and the Loire. He married a Christian princess, and he himself became a Christian as a result of the favorable outcome of a battle, for the success of which he had prayed to the God of his wife. In a struggle with the Visigoths he was entirely successful.

CLUB, a select number of persons in the habit of meeting for the promotion of some common object, as social intercourse, literature or politics. The building occupied is also called a club. The popular impression conveyed by the word is that of a group of men (or women—see WOMEN'S CLUBS) organized purely for social purposes, whose club rooms are arranged for luncheons, games, bowling, billiards, swimming and

the like, also with spacious reading and lounging rooms. Such a description applies to many clubs, but there are many others devoted to more serious matters. In all, however, there are attractive arrangements for bodily comfort.

There are clubs which give a great deal of time and large contributions of money to the study of civic reforms; to art; to engineering; to literature; to advertising. There are motor clubs, aero clubs, whist clubs, country clubs, athletic clubs, etc., many occupying permanent elaborate quarters, others in unpretentious surroundings, but all imbued with the "get together" spirit.

A popular trend of the club idea is seen in the rapidly-developing community centers (which see) and in town clubhouses maintained by towns for everybody for miles in all directions. The farmer and his family go to town and find rooms in a special building intended to minister to all bodily comforts; in many small cities these centers approach in attractiveness many city club-houses.

The coffee houses of the seventeenth and eighteenth centuries were modest examples of the beginning of modern clubs, though they were but a kind of restaurant or taverne where people resorted to take their meals.

CLUNY, *kloo'ne*, **LACE**, the name applied to a strong handsome lace made by hand in Europe, and to a number of machine-made varieties found everywhere in American markets. Genuine cluny is made of linen thread, only one size of which is used. The imitation clunies are more loosely woven, and two sizes of thread, which are usually cotton, are employed. The hand-made lace is by far the more expensive. Because of its strength and beauty, cluny is popular as an edging for dresser scarfs and table linen.

The name refers to the museum of Cluny, in the French town of that name. In this museum specimens of ancient lace are preserved. Cluny, or Clugny, is situated in the department of Saône-et-Loire.

CLYDE, *klyde*, a river of Scotland, formed by the union of several small mountain streams. On its shores is the city of Glasgow, below which it makes its way into the Atlantic through a broad estuary, or *firth*, ninety miles in length. The river itself is seventy-five miles long. The Clyde has large shipbuilding yards on its banks, and its

valley, known as Clydesdale, is noted for its orchards, coal and iron mines and a breed of fine horses.

CLYDE, LORD. See CAMPBELL, SIR COLIN.

CLYTEMNESTRA, *kl̄ tem' nē trah*, in Greek mythology, the half-sister of Helen and of Castor and Pollux, and the wife of Agamemnon. During the absence of her husband in the war against Troy, she bestowed her favors on Aegisthus, and together they murdered Agamemnon on his return from Troy. Then with Aegisthus she governed Mycenae for years, until she, with her lover, was killed by her son Orestes.



Vegetation of
Carboniferous Period

"Behind the men who battle in the trench
There stand the workmen at the lathe and
bench;
But back of them and master of them all
The miner stands and holds the world in
thrall"

If a lump of coal could tell us the story of its life it would carry the tale back millions of years, to a time when vast areas of the earth were swampy, supporting very luxuriant vegetation, when there were no men, no mammals, no birds. Only strange reptiles, strange fishes and other water animals whose species were long ago extinct lived upon the earth, whose climate was warm, even to the polar regions. During a long period of time known as the Carboniferous Period (which see)—nobody knows how many millions of years—coal was formed, layer upon layer, from the decaying vegetable matter of that humid age. During these ages large areas of low land

were choked with vegetation, which died at the bottom, but kept growing at the top. As the plants died they partially decayed, and the weight of the vegetation above pressed them closely together. In the course of time these areas were depressed and covered with water and sand. After remaining under water for a long time, they were again elevated and the sand became rock, upon the surface of which soil accumulated, and in this flourished another growth of vegetation similar to that previously destroyed. In time this was sunk below the water and was covered. The pressure and heat attending these changes converted the vegetable matter into coal. There were as many upheavals and depressions as there are seams, or layers, of coal, and since these have not all been discovered, we do not yet know how many such changes occurred. The veins of coal and the rock lying between them, taken together, are known as the *coal measures*. The vegetation of the time resembled ferns, rushes and club mosses, and it also included certain species of trees that are now extinct. It was very luxuriant, the ferns forming trees twenty-five or more feet in height, and some of the club mosses exceeding in size the largest climbing plants of the tropical regions.

Varieties. Coal is divided into three varieties, according to its degree of hardness and the amount of carbon which it contains. These are anthracite, bituminous and lignite. The early geologists applied the name bituminous to a certain kind of coal, because it had some of the properties of real bitumen—it melts at a temperature far below the burning point. Later investigations proved that no kind of coal contains bituminous matter, but the name is still applied to the coal with 50 to 80 per cent of fixed carbon. Anthracite coal has from 80 to 90 per cent of carbon.

Anthracite. Anthracite is the hardest and best variety of coal. It is supposed to be that which was first formed, and it occurs deep in the earth. The largest mines are found in the eastern part of Pennsylvania and in Nova Scotia. Though some of the veins of anthracite occur at great depths, many of them, on account of the disturbance of the coal measures, have been thrown up and outcrop on the hillsides in the anthracite region. Veins of this sort are easily mined, since the coal is obtained by excavating a

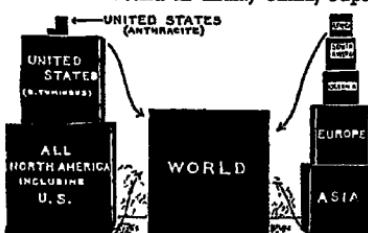
gallery or tunnel into the side of the hill. Anthracite is generally used for heating dwellings, and it is now to quite an extent employed in the manufacture of illuminating gas. It burns with little or no flame and without smoke, but it produces an intense heat.

Bituminous Coal. Bituminous coal is often known as *soft coal*. It contains much more bituminous matter than anthracite and is much softer; many varieties of it burn with considerable flame and produce a dense black smoke caused by the unconsumed carbon escaping into the air. This coal is found upon the western slope of the Appalachian Mountains, and the fields extend westward as far as the Mississippi River. The great coal fields of Ohio, West Virginia, Indiana and Illinois contain bituminous coal measures. Bituminous coal is much more extensively distributed than anthracite and is mined in much larger quantities. It is used on locomotives, in the manufacture of coke and for many other industrial purposes.

Cannel Coal is a variety of bituminous coal which is very compact and which when lighted, burns from one end of the lump like a candle; hence its name. It is desirable for burning in open grates.

Lignite This is the most recently formed coal, is usually of a brown color and con-

tinually distributed over the earth. In Europe the leading coal producing countries are Great Britain, Germany, France, Austria, Belgium and Russia. The Russian fields are the most extensive on the Continent, but they have not been fully developed. In Asia coal is found in India, China, Japan



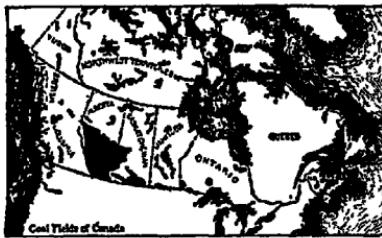
THE COAL OF THE WORLD

The portion cut from the anthracite cube represents the quantity already mined.

and the Malay Archipelago. It is supposed that the coal fields of China are the most extensive in the world, but as yet this is not known to be true. As far as discovered, the coal fields of Africa are in the southern part of the continent, in Cape Colony and the vicinity of the Zambesi River. There are also valuable coal fields in Australia, New Zealand and the Philippine Islands, and profitable mines have been opened in Mexico, Argentina and Chile.



COAL FIELDS OF UNITED STATES AND CANADA



tains more or less earthy matter. It is found in the coal measures west of the Mississippi River, and important mines have been opened in North Dakota, Montana and a number of states in the Rocky Mountains. Because of the scarcity of other fuel in these localities, lignite is of considerable local value, though its impurities render it useless for manufacturing purposes, and it does not burn as readily or produce as intense heat as either of the other varieties described.

Where It Is Found. Coal is quite gen-

As far as it is known the coal measures of the United States far exceed in area those of any other country. Altogether, they include over 300,000 square miles, or an area of more than six times the size of the state of Ohio. These coal fields are distributed as shown on the map herewith.

The coal measures of Canada are geologically extensions of those in the United States. The most important fields are in Nova Scotia and British Columbia. These fields yield a high grade of bituminous coal.

The coal produced in Saskatchewan and Alberta varies from a low grade of lignite to a good bituminous.

Production. The annual output of coal for the world is nearly 1,500,000,000 short tons. Of this, the average annual production in the United States is from 416,000,000 to 550,000,000 tons, of anthracite and bituminous combined. Great Britain produces in normal years about 250,000,000 tons, and Germany about 300,000,000 tons, of which half is lignite. France, Poland, Russia, Czechoslovakia, and Belgium each produce from 25,000,000 to 50,000,000 tons annually. Canada's production is relatively small, averaging about 15,000,000 tons, of which Alberta produces two-fifths, Nova Scotia a little less, and British Columbia about one-fifth.

Coal Reserves. The United States Geological Survey estimates that there is still in reserve in the ground unmined a vast amount of coal, estimated at over 3,000 billion short tons. These reserves, in part, are located as follows, in tons (000,000 omitted):

United States and Alaska	3,500,000
Canada	1,360,000
South America	130,000
Great Britain	166,000
Europe, Continental	360,000
Asia	1,900,000
South Africa	62,000
Australasia	200,000

Coal Mining. Coal is usually found in horizontal layers, except in the anthracite regions, where some veins are in an oblique position. In some mines the coal is so near the surface that the latter can be removed and the coal exposed. Mining is then a simple matter—as easy as quarrying and carried on in the same manner. When coal is deeper in the earth, such veins are often mined by excavating a gallery into the side of the hill, but most coal mines are entered through a vertical shaft, which is sunk to the bottom of the first workable vein. This shaft is rectangular in shape, usually 30 feet long and 8 to 10 feet wide. It is divided into four sections, in two of which the hoisting cages operate. Of the others, one is generally used for ventilation and the other for conveying pipes for pumping and electric wires. This division also has a stairway or system of ladders, which may be used in case the hoisting machinery is injured. From the foot of this shaft a gallery is excavated in opposite directions. If the

Outline on Coal

- I. DEFINITION
- II. VARIETIES
 - (1) Anthracite
 - (2) Bituminous
 - (a) Cannel
 - (3) Lignite
- III. FORMATION
 - (1) Decayed Vegetation
 - (a) By pressure
 - (b) By heat
 - (2) Upheavals
 - (3) Coal Measures
- IV. PRESENT SOURCES OF SUPPLY
 - (1) United States
 - (2) Great Britain
 - (3) Germany
 - (4) Other countries
- V. METHODS OF MINING
 - (1) Open working
 - (2) Closed working
 - (a) Room-and-pillar system
 - (b) Long-wall system
 - (c) Ventilation
- VI. BY-PRODUCTS
 - (1) Coke
 - (2) Gas
 - (3) Tar
 - (a) Naphtha
 - (b) Creosote
 - (c) Pitch
 - (d) Dyes

Questions on Coal

What is coal? How is it formed?
What means have we of knowing the sort of vegetation from which coal was formed?

What are the classes of coal according to hardness?

Which is the best? Is it found near the surface?

Where are the largest mines of your variety?

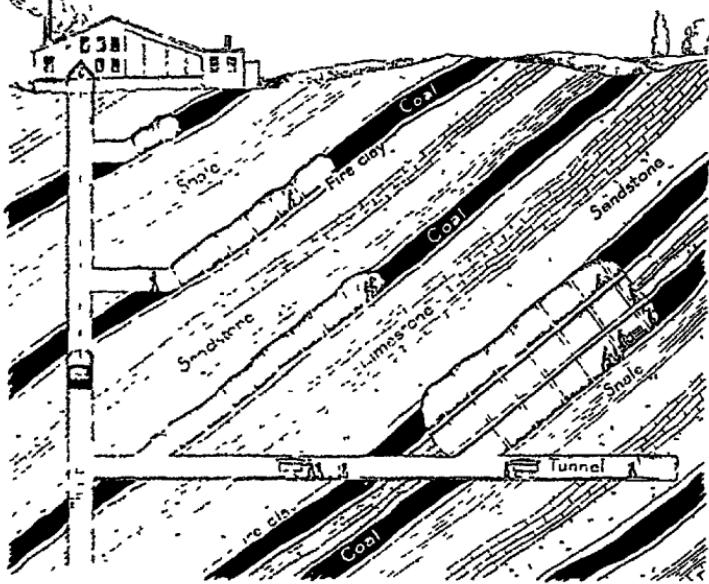
Which variety is known as soft coal?

Where are the great fields of this coal found? What are its important uses?

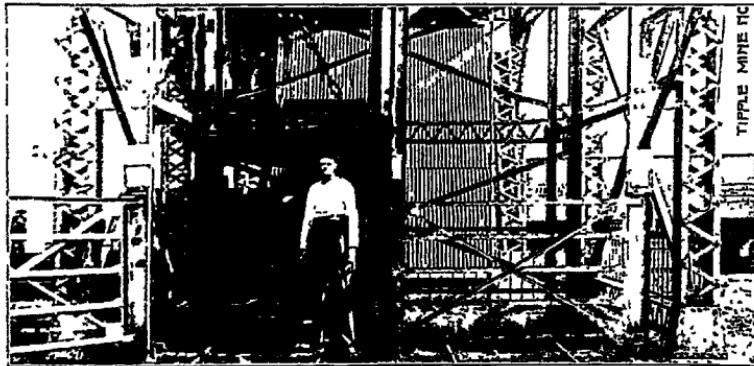
What is cannel coal? Why is it especially desirable?

Where is lignite coal found? How does it compare in age with other varieties? Why is it useless for manufacturing purposes?

HOW WE GET BLACK DIAMONDS



"Coal is preserved sunshine." The heat, light, and power which coal gives to us were stored in the earth many thousands of years ago. To get some idea of the enormous time that has passed, draw a line six inches long. Let that represent the time back to the last great ice-sheet which covered part of North America. Then think of a line 125 miles long. This line will represent the time from today back to the age when coal was being formed.



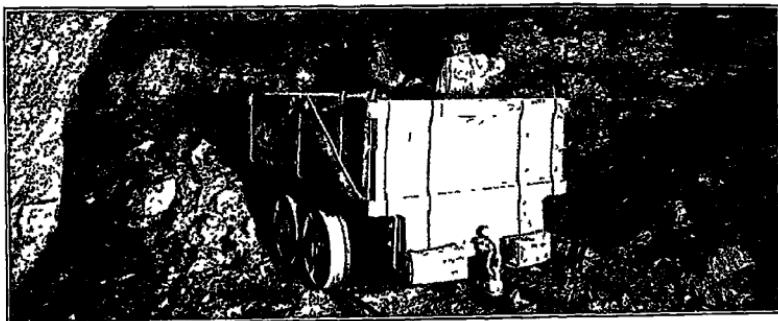
Courtesy Peabody Coal Company

This car of "black diamonds" has just arrived from the earth's vaults, a thousand or more feet below. For several years coal buyers have felt that they were paying for real treasure. But whatever the price, the miners send up a greater amount of coal every year. The total production in North America for a recent year would make a square pile fifty feet wide, as high as a two-story house, and would reach from the Atlantic to the Pacific Ocean (3,466 miles).



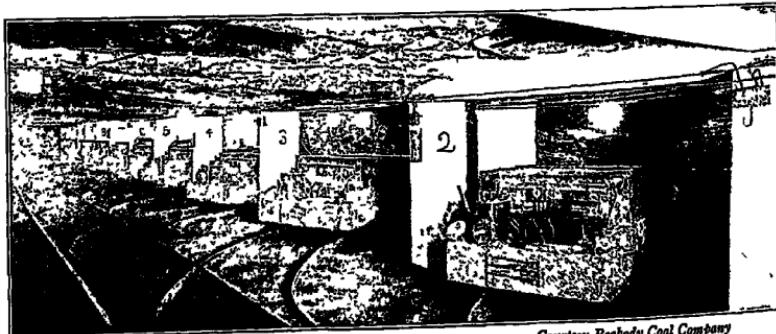
Courtesy Peabody Coal Company

A compressed-air machine undercutting seam before blasting. The use of labor-saving and time-saving devices in mines is constantly increasing, but at the best, the work of the miner is far from pleasant; darkness, dust, heat, not the best of air, danger of explosion from "fire damp"—these are some of the conditions which he must face every day when he goes down to get out the coal for your use.



Courtesy Peabody Coal Company

Coal broken down by blasting. When the car is loaded it will be hauled to the foot of the shaft and then to the surface. The United States produces more coal than any other country. Do we realize how necessary to our comfort coal is? "Coal stands not beside, but above every other natural resource: with coal everything is possible. The nation with coal commands, that without obeys."



Courtesy Peabody Coal Company

These electric locomotives haul trains of loaded cars in the many galleries of the mine. In small mines this hauling is done by mules. In addition to the fuel uses of coal, we get from it a variety of by-products: ammonia, aspirin, phonograph records, benzol, food preservatives, mothballs, "TNT," flavoring extracts, and perfumes.

vein of coal is deep enough to admit of working without the removal of rock, little or no rock is disturbed; otherwise, enough rock has to be excavated to enable the miners and tramcars to pass through the gallery. From this main gallery, other galleries are excavated at frequent intervals, running at right angles to the main gallery, and from each of these are still smaller galleries, leading into the vein of coal. The roof of the mine may be supported in one of two ways—by leaving pillars of coal at frequent intervals, or by the use of timbers. In a mine free from obstructions, the arrangement of galleries resembles very closely that of the streets in a well-planned city.

Tramways are laid in the main gallery and those leading off from it. Upon these, cars are hauled by mules or, in very large mines, by electric power, to the foot of the shaft, whence they are run upon the hoisting cages and elevated to the surface, where they are unloaded by dumping. In some of the coal measures, the shaft is sunk until it cuts a number of veins of coal, and in this case cars are hoisted from different levels; but in the bituminous fields it is not customary to work more than one vein at a time.

Because of the formation of gases (see FIRE DAMP), coal mines need to be more thoroughly ventilated than other mines. The ventilation is provided either by means of a fan at the foot of the shaft, to draw air from a fresh air shaft at another part of the mine, or by a fan on the surface, which forces the air in through a shaft constructed for that purpose. By the use of partitions the direction of the air current is controlled so that every part of the mine is ventilated. The portions newly opened are usually more dangerous than the others, for it is in these that the gases are liable to collect.

History. It is not known when or by whom coal was first used. It is referred to by Greek historians as early as 300 B. C., and it was in use in Great Britain as early as A. D. 852. It is supposed that the Britons were the first people to make practical use of it, and coal-mining was in successful operation in the island more than three hundred years before Columbus discovered America. The first discovery of coal in the United States, of which we have any record, was made by Father Hennepin near Ottawa, Ill., in 1679. The first mine worked

in the United States was opened at Richmond, Va., in 1750. Anthracite was mined as early as 1793, but on account of the difficulty of igniting it, it had not come into general use until the second quarter of the nineteenth century. Bituminous coal came into use in the United States earlier than this, but on account of difficulty of transportation it was not placed on the market until after 1820. From that date the use of coal became general, and with industrial development its uses have multiplied. However, within recent years petroleum and gas have come into such general use for fuel that the supremacy of coal is challenged.

Related Articles. Consult the following titles for additional information:

Carbon	Diamond
Carboniferous Period	Geology
Charcoal	Mining
Conservation	Pest

COALITION, *ko' alish'un*, CABINET, a cabinet representing the various political parties of a country. A Cabinet usually is strictly a one-party organization. It has always been so in the United States, as it is believed that the affairs of state can be administered more efficiently if the President's advisers hold the same political beliefs as he. Such a Cabinet makes for harmony. On the other hand, the one-party Cabinet frequently prevents the nation from profiting by the services of the strongest men for particular positions. This may become a serious matter in times of stress, as during the World War, a fact recognized by Great Britain as early as 1915. In May the Cabinet headed by Asquith was reorganized, and a new Coalition Cabinet was chosen, made up of Liberals, Unionists and a Labor member. As the war progressed several Cabinet changes were made, but the coalition principle was retained. There was considerable agitation in America after the country entered the war for a Cabinet representing more than one party. See CABINET.

COAL TAR, or **GAS TAR**, a substance obtained in the distillation of coal for the manufacture of illuminating gas. It is a dark-colored, more or less viscous, mass, with a strong, disagreeable odor. It passes over with the gas into the condensers, along with ammonia liquor, but being heavier than the latter, it is easily separated from it when the whole is allowed to stand. Within recent years a great number of valuable products have been derived from coal tar by

distillation, such as ammonia, naphtha, creosote, carbolic acid and benzene, while it is also the source of the whole series of aniline colors (see ANILINE), other dyes, of alizarine and salicylic acid. It is also utilized in the manufacture of roofing, concrete and tar paper, in road making, and in the production of a disinfectant, and is employed as a preservative of timber and as a protective paint. Its derivatives are marketed as oils, medicines, flavors, perfumes, etc. The stress of the World War demanded great expansion of the coal-tar industry in the United States and Canada. The advance made by the former country is described under the title DYEING.

COASTAL, *kōs'ē-tal*, **PLAIN**, in general, a plain formed along the coast by the action of waves and tides, but, particularly, that portion of North America lying along the coast of the Atlantic Ocean and the Gulf of Mexico and extending from about the latitude of New York to the city of Vera Cruz. The western boundary of this plain is the foothills of the Appalachian Mountains, and the upper portion of it is usually called the Piedmont region. The plain varies in width on the Atlantic coast from fifty to 200 miles, and from the Gulf of Mexico it extends northward into the Mississippi Valley as far as the Ohio River. A narrower section also extends south and west through Texas and along the coast of Mexico. Along the Atlantic coast the western boundary is marked by an abrupt rise, caused by the upheaval of the rocks which formed the mountains. This edge, or rise, is usually known as the Fall Line. Below this most of the streams are navigable, and at the fall line they furnish abundant water power. For these reasons numerous thriving cities are located along this line. Among these are Richmond, Va., Raleigh, N. C., and Columbia, S. C.

COAST AND GEODETIC SURVEY, UNITED STATES, a bureau in the Department of Commerce having charge of the surveys of the United States and its dependencies, including the interior, coasts and coast waters. This bureau was established in 1807 and was made a bureau in the treasury department, but its work was so delayed that but little was accomplished previous to 1832. From that year to the present time the scope of its work has been rapidly broadened. In 1878 the bureau was designated as the Coast

and Geodetic Survey, and in 1903 it was transferred to the department of commerce and labor. As now organized the bureau is in charge of a superintendent and operates under two divisions, the field division and the office division.

Some of the most important results accomplished by the bureau are the making of a minute survey of the coasts and the mapping of the same, together with the coast waters as far out as necessary, of the entire coast line of the United States, including Alaska, and of a part of the island possessions; the making of a network of levels over the eastern half of the United States, from the Atlantic Ocean to the Great Lakes; the making of important triangulations across the United States, notably that along the thirty-ninth parallel, and another along the ninety-eighth meridian, which extends into Mexico. The latest survey of importance covered the Philippine Islands and surrounding waters, completed in 1915.

COAST GUARD, the name applied since January, 1915, to the combined life-saving service and revenue-cutter service of the United States. The law by which the union was effected provides that operation shall be in charge of the Treasury Department in peace times, but that it shall operate in time of war as a part of the navy and be under the control of the Navy Department.

Life-Saving Service. This branch of the government was organized in 1871, prior to which date all activity of this nature was local and was supported by voluntary subscriptions. There are now 279 coast guard, or life-saving, stations, under an organization comprising thirteen districts. Stations are located on the Atlantic coast, the Gulf of Mexico, the Great Lakes, and the Pacific coast, including stations in Alaska. There is one purely inland station, at the falls of the Ohio River, near Louisville, Ky.

Equipment. Each station is equipped with a well-constructed building containing living quarters for the men—from ten to twenty—and space for boats.

The boats are usually two in number, each about twenty-five feet long and six to eight feet wide, and they are equipped with air chambers to prevent sinking. There is also in each station a small cannon whose range is nearly half a mile. The cannon shoots a projectile, to which is fastened a stout line, to a vessel in distress, when high seas make

it impossible to navigate the station boats. When the line is seized by the vessel's crew it is used to haul ropes and breeches buoys from the shore, and in these the passengers and crew effect their escape. (In connection with life-saving devices, see **LIFE PRESERVER**.)

Revenue Cutter Service, a department which enforces laws relating to the interests of the United States on all waters belonging to the nation. Under such supervision belong infraction of customs laws, quarantine regulations and neutrality in time of war. There are forty-four steam vessels in the service, and nineteen harbor and anchorage vessels. The officers are commissioned in the navy and have the same pay and allowances as regular navy officers.

Duties of the Coast Guard. In general, the duties of the service may be outlined as follows:

- 1 Rendering assistance to vessels in distress and saving life and property
- 2 Destruction or removal of wrecks, derelicts and other floating dangers to navigation
- 3 Extending medical aid to United States vessels engaged in deep sea fisheries
- 4 Protection of the customs revenue
- 5 Operating as a part of the navy in time of war or when the president shall direct
- 6 Enforcement of law and regulations governing anchorage of vessels in navigable waters
- 7 Enforcement of law relative to quarantine and neutrality
- 8 Suppression of mutinies on merchant vessels
- 9 Enforcement of navigation and other laws governing merchant vessels and motor boats
- 10 Enforcement of law to provide for safety of life on navigable waters during regattas and marine parades
11. Protection of game and the seal and other fisheries in Alaska, etc
- 12 Enforcement of sponge fishing law.

In addition to the foregoing the services of the coast guard include many other things, such as warning vessels running into danger, medical and surgical aid to the sick and injured, recovery and burial of bodies cast up by the waters, extinguishing fires, maintenance of public order, acting as pilots in emergencies and furnishing transportation to other branches of the public service

COASTING, a favorite winter pastime from the earliest days, and still in the United States the most popular winter sport with children, excepting, perhaps, skating. The sleds used in coasting are made in a great variety of forms, some low and some high, some long and narrow. In some the runners are of solid board, shod with steel,

while in others the runners consist of open iron framework, drawn forward and curved upward in front. Where the snow is loose the high sleds are better, but on a well-packed slide the low ones make better time and are easier to handle. *Bobs* are constructed by fastening two ordinary sleds together by a long plank, the first one being attached to the plank by a pivot, which allows motion in steering. The steersman usually lies flat and grasps the forward sled in such a way that he may turn it easily, while the rest of the party group themselves behind him. See **TOROGGANING: SKI**.

COAST RANGE, a range, or series of ranges, of mountains, at a short distance from the Pacific coast, extending through the western part of California, across Oregon into Washington, where it is continued by the Olympic Mountains, and thence into British Columbia. Some of the summits rise to a height of 7,000 and 8,000 feet, and among the best known in California are Mounts Hamilton, Tamalpais and Diablo. The San Bernardino Mountains are sometimes considered a part of the Coast Range.



COATI

longing to the raccoon family. The coati has a longer body than other members of the same family, and has a long, flexible snout. Coatis feed on worms, insects and the smaller quadrupeds, but chiefly on eggs and young birds. There are two species, the Mexican and the Brazilian.

COBALT, *ko'balt*, a lustrous, steel-gray metal with a reddish tinge, related to iron and nickel, and generally occurring in combination with arsenic and sulphur. It is often found in the same ore with nickel. Cobalt is never found free in nature except in meteorites. Pure cobalt obtained from ores is harder and stronger than iron, takes a good polish, and will neither tarnish nor rust. It is of chief value commercially

through its compounds, some of which are used to color glass, porcelain and paper. Cobalt blue is one of the most important of these compounds. The metal has given its name to a town in Ontario, where silver ores containing cobalt are found in such abundance as to constitute the world's chief source of supply.

COBALT, ONT., a town in the Nipissing district, on Cobalt Lake and the Temiscaming & Northern Ontario Railway. The Cobalt region is one of the richest silver producers in the world. Cobalt silver was discovered here in 1904, and in a few years the annual shipments of ore were valued at \$16,000,000. In addition to silver there have been found large deposits of nickel and arsenic. A large machine shop and foundry and several ore concentrators are located here. The town is 330 miles north of Toronto. Population, 1931, 3,885.

COBB, IRVIN SHERWOODSBURY (1876-), a newspaper man and special correspondent, called by journalists the most brilliant of American reporters. His right to this distinction seemed confirmed by articles from his pen from the war zone in Europe, beginning in September, 1914.

Cobb was born in Paducah, Ky. He learned shorthand and became a reporter on a home paper. Soon greater Kentucky papers secured his services, and in 1904 his fame had reached New York City, whither he was called as special writer on the *Sun* and the *World*. At the outbreak of the World War he was engaged by the *Saturday Evening Post* of Philadelphia to write exclusively for it on the gripping war topic. While on visits home during the war he was in constant demand for lectures on the conflict. His writings are filled with humor and originality. In book form have appeared *Europe Revised, Paths of Glory, Back Home, Roughing It De Luxe, Speaking of Prussians—; Live Talks with Dead Ones, Old Judge Priest, The Glory of the Coming, The Abandoned Farmers, Incredible Truth, and Both Sides of the Street*, as well as many others less famous. Cobb is doubtless the only man who ever made money from an operation on himself for appendicitis; he wrote about it in a long article *Speaking of Operations*.

COBDEN, RICHARD (1804-1865), an English statesman, known as the "apostle of free trade." His first political writing was

a pamphlet entitled *England, Ireland, and America*, published in 1835. In this he gave clear utterances to the political views to which he adhered throughout his life, advocating non-intervention in the disputes of other nations, and maintaining it to be the only proper object of the foreign policy of England to increase and strengthen her connections with foreign countries in the way of trade and peaceful intercourse. In 1841 he entered Parliament, and he directed his efforts toward the repeal of the Corn Laws. The credit for the repeal, which was accomplished in 1846, belonged largely to Cobden.

COBLENZ, ko'blyenz, GERMANY, the capital of the Prussian Rhine province, is situated at the meeting place of the Rhine and the Moselle rivers, about fifty-seven miles southeast of Cologne. The city has many fine educational institutions, and a number of interesting medieval buildings. The chief industry is the production of Moselle wine. Other principal manufactures include boats, dyes, pianos, paper, machinery and sugar. The city is a center for railway and river traffic. The central railway station just outside the city walls of former days is a junction point for the Cologne-Mainz and the Metz-Berlin railways.

The important buildings are the church of Saint Castor, the castle of the electors of Trier, the Metternich house, and the palaces of Clement Wenceslaus.

Drusus the Roman general established a military post here. Population, 60,000.

COBBLER. See *QUEENSTOWN*.

COBRA, or COBRA DE CAPELLO, *ko'bryah de kah pe'l'o*, a poisonous hooded snake, found in Southern Asia. It is also called *spectacled snake* from a singular marking on the back of the neck. So exceedingly poisonous is its bite that in numerous instances death has followed within a few minutes, and under ordinary circumstances, where prompt measures have not been taken, a few hours is the longest time a person can expect to live. In India thousands of natives lose their lives yearly through cobra bites. It is probably the most deadly serpent known and does more damage than any other. The cobra is sometimes six feet in length, and when angry it raises its head and about a third of its body, swells its neck into a wide hood and assumes a very terrifying appearance. Its food consists of small reptiles, birds, frogs and fishes.

COBWEBS, a term applied to webs spun in out of way places by certain species of spiders, therefore more properly called spider webs. See SPIDERS, for description.

COCAINE, *ko'ka in*, or *ko'kane*, a white crystalline substance prepared from the leaves of a shrub called *coca*. When injected beneath the skin or in contact with the mucous surfaces, cocaine produces insensibility, and accordingly it has been used extensively by dentists and oculists in deadening the sensation of pain during minor operations. Cocaine has a quieting and restful influence, but its use tends to breed a dangerous habit, as does the use of opium.

Coca, the shrub whose leaves furnish the useful drug, is native to South America, and cultivated in Ceylon, India and Java. It grows from three to six feet tall and produces small yellow flowers, and leaves resembling those of the tea plant. The dried leaves of the plant, mixed with pulverized chalk, are chewed by the South American Indians. The leaves have a stimulating effect, but their use is considered harmful.

COCCUS, *kok'kus*, a genus of scale insects. The males are elongated, have large wings and apparently no means for sucking, but the females are rounded or oval, about an eighth of an inch in length, have no wings and possess a beak or sucker by which they take up the juices of plants. At a certain time the females attach themselves to a plant. Here they lay their eggs and die, the bodies of some species drying up and forming habitations for their young. While some of these insects are garden and hothouse pests, others are of great value; for example, kermes, cochineal and gum lac are either perfect insects dried, or the dried secretions which the insects have formed. See LAC; COCHINEAL.

COCHIN-CHINA, *ko cheen'*, or *ko'chin*, a French possession, forming part of the peninsula of Southeastern Asia, between Cambodia and Annam on the north and the China Sea. Its estimated area is 26,476 square miles. The country is traversed by the Mekong, the deposits of which have produced an exceedingly fertile soil. In the low and wet grounds much rice is grown. In the more elevated districts are grown tobacco, sugar cane, maize, indigo and betel. Among the other products are tea, gums, coconut oil, silk and spices. The natives excel in the use of wood, of which their temples and

tombs are built. Saigon is the capital. Population, 1932, 4,475,000.

COCHINEAL, *kahch'neel*, a dyestuff, consisting of the dried bodies of a species of insect, a native of the warmer parts of Amer-



COCHINEAL INSECTS ON CACTUS
Male and female

ica, particularly Mexico. The insects, which are found living on a species of cactus, are gently brushed off, and are killed by being placed in vats of hot water, in ovens or under the heat of the sun. A pound of cochineal contains about 70,000 bodies. The finest cochineal is prepared in Mexico, where it was first discovered. Cochineal produces crimson and scarlet colors and is used in making vermilion and lake. Algiers, Southern Spain and Peru are other sources of this dyestuff.

COCKATOO, the name of a number of species of climbing birds believed to be a member of the parrot family, although naturalists assume that these birds form a group by themselves. They have large hard bills, crests capable of being raised and



COCKATOO

lowered at the will of the bird, tails somewhat longer than those of the parrots, and long wings. Most of the cockatoos are white in plumage, though some of them are tinged with yellow or red. Their home is in Eastern Archipelago and Australia, where they live on roots, fruits, grain and insects. They can be easily tamed and are often kept in captivity, where some learn to speak a few words.

COCK'CHAFER, a species of beetle, remarkable for the fact that it exists four or five years in the larval stage, during which time it preys upon the roots of grass and stalks of corn. In its adult stage it is about an inch long and is black in color. As it usually comes from the ground about the beginning of May, it is called the *May bug* or *May beetle*. It is destructive to leaves of various trees.

COCK'FIGHTING, a cruel amusement practised in various countries, first, perhaps, among the Greeks and Romans. It consists of causing roosters, or male fowls, to fight until one is vanquished, which occurs only when one is so badly injured that it cannot live. It was long a favorite sport with the British, and the training, dieting and breeding of cocks for fighting was the subject of many treatises. The cruelty of the sport led to its being discontinued among the better classes of people. Until prohibited by law there was much cockfighting in the United States.

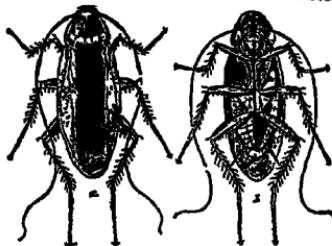
COCKLE, *kok'l*, a name for bivalve mollusks common on the sandy shores of the ocean and much used as food. The two valves of the shells are nearly equal and have two small teeth, one on each side near the beak, and two larger remote teeth, one on each side. The shells of some species are beautifully marked and colored.

COCKLEBUR, *kok'l'bur*, or **CLOTBUR**, a troublesome weed, of which three species are known in temperate regions of North America. The burs, which are hard and covered with hooked prickles, are about an inch long, and as a number of these are borne on every plant the weed is a great nuisance in pastures or ranges where cattle or sheep feed. It is difficult to get them out of the wool of the sheep after they are once imbedded there, and, accordingly, efforts are always made to exterminate the weed in wool-raising districts. As the plant dies to the ground every year, it is not difficult to control its growth, if the plants are destroyed each year before the seed ripens.

COCK OF THE WOOD. See **CAPER-CAILZIE**.

COCKROACH, an insect which is one of the most obnoxious pests that infest houses. It has an oval, elongated, flattened body, which is smooth on its upper surface. The males have parchmentlike wing covers, and the wings of the females are imperfectly de-

veloped. They are exceedingly agile in the night time, and are troublesome in houses, bakeries and wherever food is plentiful, as they eat all kinds of provisions. As they conceal themselves in cracks and crevices,



COCKROACH

a, view from above; b, view from below.

they very frequently find their way through water pipes and steam pipes into all rooms of a house.

The cockroach is a great enemy of the bedbug. Each female lays about thirty eggs in each of two compartments of a small case, which she carries about with her for seven or eight days. The young when hatched are nearly the same form as their parents, except that their wings are not well developed. There are about 1,000 species known. Various insect powders guaranteed to kill them are on the market; some housewives destroy them by pouring boiling hot water into the crevices where they hide.

COCOA. See **CACAO**.

COCONUT, or **COCOANUT**, *ko'ko nut*, an oval, woody fruit, from three to eight inches in length, covered with a thick, stringy husk and holding, inside, a firm, white, fleshy kernel. Within, the fruit is hollow, or partially filled with milk, a sweet and watery liquid of a whitish color. The thick husk, which protects the fruit, aids in spreading the tree among the islands where it is native, because the nut floats readily and may be carried long distances without injury. The cocoanut is the fruit of a palm which grows a straight, naked trunk from forty to sixty feet in height. The summit is crowned by featherlike leaves, among which the nuts hang in clusters of a dozen or more.

The cocoanut forms a large part of the food of the islanders, who eat it as it comes from the tree, either ripe or green. A large quantity of oil is obtained by pressing the fruit, and this is known as cocoanut butter,

which is exported and used in the manufacture of marine soap, in making stearin candles and for numerous other purposes. The cabbage-like bud at the top of the tree is boiled and eaten by the natives. From the sap a beverage is made which, when fermented, is called palm wine, and, when distilled, is known as *arrack*, a very strong liquor.

But the usefulness of the coconut tree does not end here. The natives use the leaves to thatch cottages, and from the fibers they make mats, cordage, baskets, sacks and other useful articles. The shells are made into beautiful cups, ladles and other ornamental utensils. From the trunks boats are made, or timbers for the construction of houses. The tree, which is a native of Africa, the East and West Indies and South America, is now grown almost everywhere in tropical countries and is one of the most useful trees in the world. A greater acreage is given to cocoanuts in Ceylon than to any other product of the soil. The tree begins to bear when about ten years of age and continues to produce from fifty to one hundred years without special attention.

COD, one of the most important of the food fishes. In the cod family there are two groups—the shore cod and the deep-sea variety. Millions are taken every year, but the supply remains constant, for cod are very prolific. A single female weighing seventy-five pounds has been found to contain close to 9,000,000 eggs. The destruction of eggs and young, which are preyed upon by other fish for food, is enormous, but the number growing to maturity is always ample.

Shore cod are confined to the temperate zones, but deep sea cod have a much wider range. The common cod, which constitutes the well-known food fish, has a slightly flattened body which tapers abruptly to the tail. It reaches maturity in about three years, but



COD

it is of sufficient size to be marketable when two years old. When full-grown the fish weighs from twelve to twenty pounds, though larger specimens are sometimes taken.

The cod spawns in February, and the best months for fishing are October, November and December. The most noted fisheries are the Grand Banks, off the coast of Newfoundland.

The fish are caught by hook and line. The fishermen go out in schooners, to each of which two or more small boats are attached. When it reaches the fishing grounds, the schooner anchors, and the fishermen put out long lines called *trawls*, to which are attached at frequent intervals shorter lines bearing hooks. A good-size schooner will put out lines containing from 10,000 to 15,000 hooks. After the trawls have been set the fishermen go along the lines in their small boats and haul in the fish that have been caught. When brought to the schooner, the fish are immediately dressed, split open and salted. The livers are saved, as from them cod-liver oil (which see) is obtained. As soon as the schooners receive a load they return to port, where the fish are stretched on platforms and exposed to the sun and air, and are dried and salted. The cod is the most important food fish taken off the eastern coast of North America.

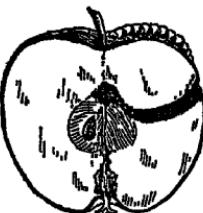
CODE NAPOLEON, the basal law of the French nation, promulgated in 1804 and still in force. After the French Revolution there was wide diversity in the laws in various parts of France, and a new code, general in its application, was demanded. Napoleon, as First Consul, interested himself in the making of the new Code, and it was named for him. From time to time other governments adopted either the letter or the spirit of the Code Napoleon. It became the basal law of the French province of Louisiana, and the laws of that state are yet built on it. It is the basis of the laws of Quebec, which was and is yet essentially French; it has been adopted widely in South America and Central America, and it is still in force in Belgium, Holland, in several cantons of Switzerland and to a considerable extent in Italy.

CODE WRITING, a system of writing messages in such a way that the meaning can be learned only through a key to the code used. For example, figures may be substituted for letters, 1 standing for A, 2 for D, 3 for H, and so on. Sometimes certain words are made to stand for other words, or the letters may be variously juggled about. It is said that there is no code so intricate that someone cannot decipher it. The

codes devised by governments for their secret messages are usually as intricate as ingenuity can make them; this is especially true in wartime. However, no code can be so baffling that experts cannot in time find the key to it, though many days of patient study may be required. Codes of the telegraph and cable companies are compiled in book form; they are not secret, but are used to shorten messages.

CODLING MOTH, a small moth whose larva is the familiar apple worm. The eggs are laid on the leaves or on the forming fruit, and when the grubs appear a few days later, they eat their way into the tiny apples at the point where the flower has fallen off. When a larva has reached its growth it emerges, seeks a sheltered place in a crevice of the bark or on the ground, and spins its cocoon. In many localities the moth appears within a few weeks, and a second brood of grubs is ready for the late crop of apples. The codling moth is the most destructive of apple pests, the estimated damage in the United States being about \$10,000,000 yearly. The best remedy is a thorough spraying with an arsenic solution just after the blossoms fall, and a second spraying about three weeks later. The poison should fall on the upturned flower ends of the little apples, for the worms must be killed before they have a chance to burrow in the fruit. When wormy apples fall to the ground they should be disposed of so as to kill the larvae, and as many of the cocoons as possible should be collected and destroyed before the moths emerge.

COD-LIVER OIL, an oil extracted from the livers of different species of cod. It is a pale yellow oil, of very disagreeable odor and taste, and is obtained by pressing it from the livers in a cold state, or by heat. It is easily digested, and if not taken in too large quantities, is considered an extremely valuable remedy in all wasting diseases. On account of its disagreeable taste, it is administered in capsules and various other forms. The milky mixture, known as *emulsion*, consists of a preparation of cod-liver oil with other remedies.



THE APPLE WORM

CODY, WILLIAM FREDERICK (1845-1917), better known as "BUFFALO BILL," was born in Scott County, Iowa. He spent his early life among Indians on the Western frontier, but at the beginning of the Civil War he offered his services as a Union scout, and rendered valuable aid to several commanders.

Cody was later a member of a camp of United States troops which protected the laborers during the construction of the Union Pacific Railroad, and he took the contract to supply the entire force with fresh buffalo meat for a certain period, hence his sobriquet of "Buffalo Bill." Later he collected a band of Indians, cowboys, rough riders, unbroken bronchos and a small herd of buffalo, and commenced a series of exhibitions in the principal cities of America. The show was known as the "Wild West Show." He made several tours of Europe with his exhibition.

COEDUCATION, *ko ed u ka'shun*, education of both sexes in the same schools. As public schools originally existed only for boys, when girls first began to attend elementary schools it was necessary for them to receive instruction separately, but in the same buildings with the boys. In this way coeducation began, and though it has been opposed in many quarters, the system has made steady advance in all progressive countries. In America boys and girls attend the same public schools from the kindergarten through high school, except in a few cities, and coeducation prevails in nearly all colleges and universities. Yale, Princeton and Harvard, however, are for men alone, while Columbia admits women only to certain departments, and only the graduate department of the University of Pennsylvania is coeducational. Women are admitted to all the state universities. Private schools are about equally divided on the subject of coeducation. In Canada, England, France and Germany women are admitted to the universities, but the English universities award them certificates instead of degrees. Generally speaking, the majority of elementary schools in Europe are mixed schools, but the reverse is true of the high schools.

COELENTERATA, *se len ter a'tah*, the next to the lowest branch of the animal kingdom, including many-celled animals, all of which are very simple organisms, which have no distinct body cavity and no distinct circulatory system. They have a body cavity in which food is digested and from which it is

carried to all parts of the body through branches of the cavity. These animals are more or less symmetrical, their parts radiating from a center. Peculiar shining organs, or thread-cells, are located in the tentacles, which are grouped around the mouth. By means of these tentacles food is captured and stunned or paralyzed by the stinging cells. Nearly all coelenterata are marine animals, and two distinct types are known: one, the free-swimming, bell-shaped form, medusa; and the other a more or less cylindrical form, fixed to some support. Some, like the coral animal, build in populous colonies and cover a great area of sea bottom. In color many of them are brilliant and show a great variety of delicate shades. See HYDRA; SEA ANEMONE; CORAL, SPONGE.

COEUR D'ALENE, *ker d'layn'*, IDAHO, the county seat of Kootenai County, thirty-three miles east of Spokane, Wash., on the Chicago, Milwaukee, Saint Paul & Pacific, the Northern Pacific, the Great Northern and the Spokane International railways. There is also a municipal airport. The city has a Catholic academy, banks, a city park and Memorial Athletic Field, both containing forty acres. It is a center for woodworking and boat-building factories. The surrounding scenery is excellent in but few spots in the Northwest. Population, 1920, 6,447, in 1930, 8,297, a gain of 28.7 per cent.

COFFEE, the seed or berry of an evergreen shrub, or small tree, which is cultivated in warm countries. The name also is given to a dark-brown, fragrant table beverage which is made from crushed coffee berries. The use of coffee is almost worldwide, particularly in cool climates, and its consumption is steadily on the increase, notwithstanding the objections which are inconsistently advanced against it.

Coffee contains a somewhat bitter principle called caffeine (*kafe'in*, or *kafe'en*). In medical practice this is a drug, and it is a stimulant, with effects both harmless and bad, depending on the quantity taken. When from one to three or four grains are taken the effect is mildly stimulating, and it is declared that such a quantity does no harm to the normal person, who limits his coffee drinking to one cup at each meal. Excessive use of coffee leads to nervousness, sleeplessness, trembling hands and the like.

The coffee tree, when wild, grows from fifteen to thirty feet high, but in cultivation

it is seldom allowed to exceed six feet. The leaves are dark green and have a waxy appearance on the upper surface. The flowers are white and appear in the axils of the leaves. The fruit is an oval, dark red berry, resembling a cherry when ripe. Each berry contains two cells, and each cell has a single seed, which forms the coffee nib or bean. These parts of the plant are shown in the color plate. Before roasting the seed is of a light green color. The tree lives for about forty years and bears fruit from the time it is three years old. The average yearly yield is about one pound of seeds to the tree, though some trees may produce from two to five pounds.

When ripe, the fruit is gathered by placing canvas under the trees and shaking them. The berries are dried in the sun, then passed between rollers, which crush the dried pulp, but do not crush the seeds. The fragments of pulp are then removed from the seeds by winnowing. After being thoroughly dried, the seeds are packed in large sacks, in which they are shipped to market. The brown appearance of the coffee found in retail stores is due to the roasting. Since the aroma developed by the roasting evaporates rapidly, coffee should not be roasted until it is desired for use. The different varieties, such as Mocha, Java and others, may be due to the locality from which the coffee is obtained, the real Mocha coming from Arabia, but they are all liable to be produced from the seeds of the same orchard, the name *Mocha* usually being given to the small beans, and *Java* to the larger ones. Mixtures of these produce other varieties. (See plate p. 3526).

Sources of Supply. Coffee is produced in Arabia, adjoining countries, and to a small



COFFEE PRODUCTION

The diagrams picture the yield of coffee in five principal producing countries. The figures represent millions of pounds grown annually.

extent in northern Africa; but the principal producing region is Brazil, which now raises over two-thirds the world's supply. Coffee

Outline on Coffee

- I. THE PLANT
 - (1) Characteristics
 - (2) Leaves
 - (a) Surface
 - (b) Color
 - (3) Blossoms
 - (a) Fragrance
 - (b) Color
 - (c) Shape
 - (4) Fruit
 - (a) Bean
 - (1) Size
 - (2) Color
 - (3) Cells
- II. CULTIVATION
 - (1) Necessary conditions
 - (2) Where grown
 - (a) Brazil
 - (b) Central America
 - (c) Mexico
 - (d) West Indies
 - (e) Ceylon
 - (f) Java
- III. CONSUMPTION
 - (1) United States
 - (2) Canada
 - (3) Germany
 - (4) France
 - (5) Austria
 - (6) Other countries
- IV. CONDITIONS OF GROWTH
 - (a) Heat
 - (b) Shade
 - (c) Moisture
- V. FOOD VALUE

Questions on Coffee

What is the height of the coffee tree? How would it compare in size with the plum tree?

What is the average number of pounds of coffee per tree from each crop?

What is the color of the berry before being roasted?

Describe the leaves, the blossoms, the fruit.

How are the berries gathered? How dried? How is the husk removed? How is coffee packed for shipment?

Of what countries is it a native?

Where does the best coffee come from, and what is it called?

is shipped from Santos, Brazil, in greater quantities than from any other port in the world. Next to the five countries shown on the preceding page as the greatest producers, other countries raise it in practically the following number of million pounds per year: Costa Rica, 72; Mexico, 60, British India, 34; Nicaragua, 30, Porto Rico, 18, before the hurricane of 1928, which destroyed a large portion of the coffee trees, but production there is again on the increase, as new trees are coming to producing age.

The World's Largest Consumer of Coffee. The United States is by far the largest consumer of coffee, and it is also the largest consumer per capita among the nations. More than a third of the crop finds its market there. Officials estimate that coffee imports every year provide twelve pounds for each person in the nation. As children are not coffee drinkers, and many adults drink little or none, the consumption by confirmed users is about twenty-five pounds each every year. It is reported that radio advertising has materially increased the use of coffee in the United States and Canada.

Next to the United States, France is the greatest user, per capita, and The Netherlands is third; then in order are Germany, Italy, Sweden and Belgium. Argentina leads in South America, and is next to Belgium; following is Denmark, then Great Britain. The latter country consumes a great deal of tea.

COFFERDAM, a temporary enclosure which engineers build under the surface of water for the purpose of securing a dry foundation in the construction of bridges or piers. Usually it is formed of two or more rows of piles driven close together, with clay packed in between the rows. When the structure is completed the water in the enclosure is pumped out. Such is the most inexpensive form of cofferdam.

COFFEYVILLE, KAN., founded in 1869, is a city in Montgomery County, one and one-half miles from the Oklahoma state line, on the Missouri Pacific, the Missouri, Kansas & Texas, and the Atchison, Topeka & Santa Fe railroads. There is a municipal airport. Industry largely centers around petroleum and lead and zinc products. The city claims the largest zinc oxide plant in the world. There are also manufactures of oil-well machinery, tank cars, structural steel, and dairy products. There are two parks, a large ball-

field, and a children's pool. The municipal auditorium seats 2,500 people; there is also a Carnegie Library, and the city has two hospitals. The commission form of government, with mayor and two commissioners, is in force. Population, 1930, 16,198.

COFFIN, the chest or box in which a dead body is enclosed for burial. Coffins were used by the ancients chiefly to receive the bodies of persons of distinction. Among the Romans before the Christian Era it was the custom to consume the bodies by fire and deposit the ashes in urns (see *CREMATION*), but stone coffins were later introduced. In Egypt coffins seem to have been universally used in ancient times. They were of stone, earthenware, glass and wood. The ancient Greeks made a coffin of a peculiar kind of limestone, which in a few weeks absorbed the flesh and other tissues of the body. This stone was called *sarcophagus*, and the coffins made from it took the same name, which means *flesh-eating*. Coffins among Christians were introduced with the custom of burying. Modern coffins are usually made of wood and are sometimes enclosed in a leaden case. Some tribes of Indians make basket coffins.

COHAN, GEORGE MICHAEL (1878-), a versatile and widely known theatrical producer, actor and dramatist, was born at Providence, R. I. At the age of nine he appeared professionally in the play *Daniel Boone*. Later he acted in vaudeville with his father, mother and sister, the family being billed as the Four Cohans. Cohan also starred in *Little Johnny Jones*, *George Washington, Jr.* and *Broadway Jones*, all of which he himself wrote. He is the author or adapter of numerous other successful plays, including *The Talk of New York*, *Get-Rich-Quick-Wallingford*, *Seven Keys to Baldpate*, *Hit-the-Trail Holiday* (based on the character of "Billy" Sunday), *The Song and Dance Man*, *The Home Towners*, and *American Born*. Cohan achieved great success in O'Neill's *Ah Wilderness*. Of the many popular songs he has written the best known are *So Long, Mary* and *Over There*. The latter was the most successful of the scores of light songs inspired by the World War, and it became immensely popular. Cohan also appeared in moving pictures.

COHESION, *ko he'shun*, in physics, is that property of matter by virtue of which particles of like substance adhere to one another when brought into close contact.

Solids have greatest cohesion, liquids have little, and gases entirely lack it. Cohesion causes the substance in brick, iron, etc., to stick together and retain the shape of the objects. For the property which causes particles of unlike matter to adhere to one another, see *ANNEALING*.

COHOES, *ko hōz'*, N. Y., founded in 1720 and chartered as a city in 1870, is nine miles north of Albany and three miles west of Troy, at the confluence of the Mohawk and Hudson rivers, and on the Delaware & Hudson and New York Central railroads. Electric railways run to all nearby cities. The chief manufactures include cotton cloth, underwear, rayon, knit goods, paper and wall paper. There are over 300 manufacturing establishments. There is a large power plant which generates 50,000 horse-power, furnishing power to all the leading mills. The city was given the Indian name for the falls in the Mohawk at this point. Population, 1920, 22,987, in 1930, 23,226.

COINING, the art of converting pieces of metal into current coins for the purposes of commerce. Coining is usually done in a government establishment, called a *mint*. Coining is one of the prerogatives of the supreme power in all nations, and counterfeiting or otherwise tampering with the coin is severely punished. In some cases small nations have their coins made by other countries, but they retain full power to regulate their coinage systems. In the United States the bureau of the mint was established as a division of the Treasury Department in 1873. It has charge of the coinage for the government and makes assays of precious metals for private owners (see *ASSAYING*).

In the United States and Canadian mints the metal is first melted and cast into a bar. It is then *refined*, after which the alloy is added to harden it, the proportion being one part alloy to nine parts pure metal. The metal is then cast into ingots, which are taken to the *rolls*, where they are reduced to bars. The rolling machines are four in number, the rollers being adjustable and the space between them governed by the operator. About 200 ingots are rolled per hour with each pair of rollers. When the rolling is completed the strip is about six feet long. As it is impossible to roll perfectly true, it is necessary to *draw* these strips after they are softened by *annealing*. The drawing benches resemble long tables, with a bench on either side, at

the end of which is an iron box screwed to the table. In this are fastened two perpendicular steel cylinders with the space between them equal to the required thickness of the bar. As the bar is drawn between these cylinders they reduce it to an absolutely uniform thickness.

These strips are now taken to the *cutting* machines, each of which will cut 225 blank coins per minute. The *press* now used consists of a vertical steel punch. From a strip worth \$1,100 about \$300 of blanks will be cut. These are then removed to the adjusting room, where they are adjusted. After inspection they are weighed on very accurate scales. If a blank is too heavy, but near the weight, it is filed off at the edges; if too heavy for filing, it is thrown aside with the light ones to be remelted. The blanks, after being adjusted, are taken to the coining and milling rooms, and are passed through the *milling* machine. The blanks are fed to this machine through an upright tube, and as they descend are caught upon the edge of a revolving wheel and carried about a quarter of a revolution, during which the edge is compressed and forced up. By this apparatus 560 dimes can be milled in a minute; for large pieces the average is 120. The massive but delicate *coining* presses coin from 80 to 100 pieces a minute. These presses are attended by women. After being stamped, the coins are taken to the coiner's room. The light and heavy coins are kept separate in coining, and when delivered to the treasurer they are mixed in such proportions as to give him full weight in every delivery. By law, the deviation from the standard weight for gold coin must not exceed the one-hundredth part of an ounce to \$5,000, and for silver coin, two-hundredths of an ounce to \$1,000. Only the most perfect machinery can assure such results. See *MINT*; *MONEY*.

COINS, FOREIGN, VALUE OF. Each nation has its own system of coinage, and different units serve as bases of monetary systems. The United States and Canadian unit is the dollar; the British, the pound sterling; the French, the franc; the German the mark. The comparative value of all these units and those of other countries is given in the following table, the equivalents indicated applying when exchange conditions between nations are at par. In times of economic and financial depression, these values may fluctuate greatly.

Gold is the standard unless otherwise specified.

Country	Monetary Unit	Equivalent in U.S. Money
Argentina	Peso	\$0.9648
Austria	Schilling	.1407
Belgium	Belga	.1890
	Franc (paper)	.0278
Bolivia	Boliviano	.3650
Brazil	Milreis	.5462
British Honduras	Dollar	1.0000
Bulgaria	Lev	.1930
Canada	Dollar	1.0000
Chile	Peso	.1217
China	Tael (silver)	.6314-.7034
Colombia	Peso	.9783
Costa Rica	Colon	.4653
Cuba	Peso	1.0000
Denmark	Krone	.2680
Dominican Republic	Dollar	1.0000
Ecuador	Sucre	.2000
Egypt	Pound	4.9431
Estonia	Kroon	.2680
Finland	Markka	.0262
France	Franc	.0892
Germany	Reichsmark	.2382
Great Britain and Dominions in Aus- tralasia and Africa	Pound	4.8665
Greece	Drachma	.0180
Guatemala	Quetzal	1.0000
Haiti	Gourde	.2000
Honduras	Lempira	.5000
Hungary	Pengo	.1749
India (British)	Rupee	.3650
Indo-China	Piaster (silver)	.4554
Italy	Lira	.0586
Japan	Yen	.4985
Latvia	Lat	.1930
Liberia	Dollar	1.0000
Lithuania	Litas	.1000
Mexico	Peso	.4085
Netherlands	Guilder	.4020
Newfoundland	Dollar	1.0000
Nicaragua	Cordoba	1.0000
Norway	Krone	.2680
Panama	Balboa	1.0000
Paraguay	Peso	.9648
Persia	Kran (silver)	.0776
Peru	Libra	4.8665
Philippines	Peso	.5000
Poland	Zloty	.1128
Portugal	Escudo	1.0605
Rumania	Len	.1930
Russia	Ruble	.5000
Salvador	Colon	.4424
Siam	Baht (takkal)	.1930
Spain	Peseta	.5678
Straits Settlements	Dollar	

Sweden	Krona .. .	2680
Switzerland	Franc ..	1930
Turkey	Pound ..	4 4000
Turkey	Plaster ..	0440
United States..	Dollar ..	1 0000
Uruguay ..	Peso .. .	1 0842
Venezuela ..	Bolivar ..	1930
Yugoslavia	Dinar .. .	1930

COIR, *kuahr*, fiber from the husk of the cocoanut, from which are manufactured matting, bagging, ropes and cables. Coir cordage, because it lasts well in salt water, and also because it is light, strong and elastic, is preferable in many respects to ropes of hemp. Mats and matting are now largely made of coir, which is also used in coarse brushes, for stuffing mattresses and for other purposes

COKE, a variety of charcoal, made by burning bituminous coal with a limited supply of air. The coal is usually burned in a brick or stone kiln, called an oven. The coal is put through an opening at the top of the oven, and the coke is taken out at the bottom. A ton of coal will produce about two-thirds of a ton of coke. Coke is also formed as a by-product in the manufacture of illuminating gas. Good coke has an iron gray color, is hard, porous and brittle. It is almost pure carbon and is extensively used in smelting iron and other metals, since the sulphur contained in the coal injures the metal. Coke is also used to some extent as a fuel for heating purposes. It is manufactured in large quantities, in sections where bituminous coal of the proper quality is found, or in places to which it can be transported economically to industrial centers.

COKE, EDWARD, Sir (1552-1634), an eminent English lawyer. He was chosen recorder of the cities of Norwich and of Coventry, knight of the shire for his county and attorney general. As such, he conducted the prosecutions for the crown in all great state cases. In 1613 he became chief justice of the Court of King's Bench, but because he opposed James I and supported liberal measures in Parliament, he was in 1621 committed to the Tower and soon after expelled from the privy council. In 1628 he was chosen member for Buckinghamshire and was one of the chief authors of the Petition of Right. His principal works are legal textbooks of the highest value, the most famous being *Coke upon Littleton; or the First Institute*.

COLCHICUM, *kol'kuk um*, the name of a group of plants whose common representative is the meadow saffron. This is a bulbous-rooted, stemless, perennial plant. From a small corm or bulb buried about six inches deep and covered with a brittle brown skin, there rises in the early autumn a tuft of flowers having much the appearance of crocuses, flesh-colored, white or even variegated. They soon wither, and the plant disappears till the succeeding spring, when some broad leaves are thrown up by each corm, along with a seed vessel. From the seeds is obtained a bitter alkaloid drug called *colchicine*.

COLD, *Comox*, the medical name for which is *coryza*, formerly ignored to as great a degree as possible by those afflicted and endured with as much fortitude as could be summoned, but now recognized for the dangerous malady it really is. A cold manifests itself by inflammation of the nasal passages, and is due to infection by a microorganism that medical science does not fully understand. A severe cold brings warning of its approach by an irritating dryness in the nose, followed within a few hours by the beginning of a watery discharge which increases in intensity. If unchecked, the thin, watery discharges are accompanied in time by discharges of more solid, yellowish, purulent matter, all the while the patient suffers temperatures above normal, which may develop fever. A cold always invites other dangerous maladies.

The sufferer from a cold should remain in bed during the period of most serious manifestation, and avoid human contacts, so far as possible, for coryza is highly contagious. Little food should be taken, regardless of the old adage, "Stuff a cold and starve a fever." During continuance of the fevered condition, much water should be drunk. Internal remedies prescribed by a physician are preferred to nostrums snuffed through the nose.

COLD STORAGE, a system of cooling or freezing, whereby any commodity can be kept indefinitely at a given temperature. An ice box or refrigerator in the home is a cold storage plant on a small scale. In large buildings erected solely for cold storage there are rooms where the temperature is maintained a few degrees above the freezing point and others where it is always below freezing. Some commodities will be destroyed if frosted, while others must be frozen if they are to be preserved for any

great length of time. For example, potatoes keep best at a temperature of 36°; bacon and ham, 40° to 45°; while butter, if it is to be kept in storage for several months, should be kept at 10°; fish, at 15° to 18°. Furs are stored in summer in vaults whose temperature is reduced to 30° to 35°.

In addition to air-tight rooms, a storage plant consists of machinery for cooling the air and pipes from it to all rooms to convey the cooled air. The method of cooling in the best plants is by evaporation, using a volatile liquid such as ammonia. Sulphuric ether, sulphurous acid and carbonic acid are used to some extent.

The refrigeration idea has been applied also to railroad cars, but here ice or carbice is used to maintain low temperatures. Through such refrigeration cities in northern latitudes are able to secure berries, fruits and vegetables from warm southern sections months before such products can be ripened at home. For explanation of the substance carbice, see CARBONIC ACID GAS.

COLD WAVE, a wind or anti-cyclonic condition of the atmosphere, which produces a sudden fall of temperature of several degrees. In the United States and Canada cold waves usually come from the northwest, but sometimes they come from other directions. They are generally characterized by a high barometer and a clear atmosphere. Sometimes they extend so far south in the spring as to cause great damage to the fruit crop. The most extensive cold waves are caused by a large area of high pressure, which seems to cover the earth with a blanket of cold air. The Weather Bureau is able to predict cold waves twenty-four or thirty-six hours in advance of their arrival. The signal indicating their approach is a white flag with a large black square in the center. See CLIMATE; WEATHER BUREAU.

COLEOPTERA, *ko le op'ter ah.* See BEETLE.

COLERIDGE, SAMUEL TAYLOR (1772-1834), an English poet, associated with Wordsworth in the production of the *Lyrical Ballads* at the beginning of the Romantic Period. Coleridge was born at Ottery Saint Mary, in Devonshire. From his childhood he was a voracious reader, and such books as the *Arabian Nights*, which he read as a child, undoubtedly influenced the course of his genius. He entered Cambridge University, but did not remain to graduate, and

shortly after leaving the university he became interested with Southey in a scheme for founding an ideal community on the banks of the Susquehanna. As no unmarried people could join this community, Coleridge and Southey married in 1795, sisters, but their scheme went no further than this, as they had no funds to carry it out.

In 1796 Coleridge took a cottage at Nether Stowey in Somersetshire, and here he lived for two years as a neighbor of Wordsworth and his sister. The two young men, with Dorothy Wordsworth, took long rambles, and together they planned the *Lyrical Ballads*, which appeared in 1798. Coleridge's most notable contribution to this was *The Ancient Mariner*. In the same year he traveled in Europe with Wordsworth, and on his return he settled in Keswick. In 1804 he went to Malta, thinking to gain some relief from the rheumatism, but returned two years later without having benefited his health. To gain escape from his rheumatic pains, he had taken to opium, and the habit rapidly mastered him. Unable to fight against it alone, he lived from 1816 until his death chiefly with Doctor Gilman in London, leaving his family to the care of Southey. He was to a certain extent successful in mastering the habit, but it had seriously impaired his ability to work and his powers of concentration, never great, and he produced little that was noteworthy during his later years. Coleridge's conversational abilities were great, however, and during these years in London he was the center of a group of young men who met once a week to hear him talk.

All the poetry for which Coleridge is most celebrated, *The Rime of the Ancient Mariner*, *Christabel* and *Kubla Khan*, was written in a little over a year. Few poets have attained so high a place with so small a body of work; yet the wonderful melody of his verse, its imagery, its fancy, its suggestiveness, entitle him to rank with the truest of English poets.

COLERIDGE-TAYLOR, SAMUEL (1875-1912), a modern English composer, of African descent. He studied at the Royal Academy from 1890 to 1896, achieving distinction as a composer. His most important work was a musical setting for the wedding scene of Longfellow's *Hiawatha*. He composed music for some of Stephen Phillips'

dramas, and wrote a sacred cantata, *The Atonement*, besides numerous songs, ballads and orchestral compositions

COLFAX, *kol'faks*, SCHUYLER (1823-1885), an American statesman, born in New York City. He became prominent as a Whig editor in Indiana and was elected to Congress in 1854, serving until March, 1869. From Dec 7, 1863, to March 4, 1869, he was Speaker of the House, and was elected on the Republican ticket Vice-President of the United States in 1868. During his incumbency of that office he was accused of complicity in postal frauds and the Credit Mobilier scandal, but nothing was proved against him. See CREDIT MOBILIER.

COLGATE, WILLIAM (1783-1857), a manufacturer of soap whose philanthropy to Hamilton Literary and Theological Seminary at Hamilton, N. Y., induced a change of name to Colgate University in 1890. Colgate was born in England, but emigrated to the United States; about 1850 he established his business, which his family continued.

COLIC, *kol'ik*, a cramping pain in the stomach or intestines. It is a common ailment of babies, especially during their first six months of life. The most frequent cause is taking food into a stomach which has not rested sufficiently from a previous feeding. That is, too frequent feeding should be avoided. In some cases of colic the pain is caused by gas in the stomach or intestine. If the gas is in the stomach relief may be given the baby by holding him upright or laying him on his stomach. A change of position or trotting the baby sometimes helps intestinal colic. Better measures than these are a hot bath, a hot-water bag applied to the abdomen, and a cloth dipped in turpentine applied to the same place.

COLIGNY, *ko leen'ye*, GASPARD DE (1517-1572), a French admiral and Huguenot leader, who won distinction in the wars of Francis I and Henry II. He was made admiral in 1552. After the death of Condé, he became commander in chief of the Huguenots, and on the night of Saint Bartholomew's Day he was put to death. See BARTHOLOMEW'S DAY, SAINT.

COLLATERAL, *kah lat'er al*, in business and law, is anything of value pledged as security for the performance of an act, such as jewelry pledged as guarantee of payment of a sum of money to a private individual or bonds held by a bank as security for the pay-

ment of a loan. Collateral must be something which can be readily converted into cash in case the debtor fails to meet his obligation. In such event he loses the property deposited as collateral, unless from its sale the creditor realizes more than the amount due him. Such residue would be returned to the debtor, less costs involved.

COLLEGE, a term embodying several meanings, but applied most commonly in North America to an educational institution of higher rank than a high school or academy, but not so broad in scope as a university. As the term is understood in the United States, a college may be a part of a university, or it may be an independent unit. For instance, the university is generally made up of a college of liberal arts and various professional schools, as is true of the state universities, but an independent school giving instruction in literature, history, science, etc., without having special professional schools or departments is properly a college. This distinction is shown by comparing Radcliffe College with Harvard University and Barnard College with Columbia University. In each instance the colleges are women's schools of liberal arts affiliated with the larger institutions.

Canadians use the term in much the same way, but apply it more loosely. Some Canadian high schools and academies are called colleges, and a high school of first rank in Canada is occasionally called a *collegiate institute*. It often happens, too, that the college belonging to a particular university is located in a different city from the main institution. For example, McGill University of Montreal maintains colleges in Victoria and Vancouver, B. C.

COLLIE, *kol'ie*, a variety of dog especially common in Scotland, because of its intelli-



gence of much use to shepherds. The collie will take a flock of sheep to pasture, keep them together, protect them from wolves and

bring them all back safely at night. This dog is of medium size and varies much in coloring. Black and white collies are common, and those with black bodies and tan-colored legs are thought to be particularly handsome. The collie's head is somewhat fox-shaped, his ears are erect, but having drooping points, and his tail is rather bushy, with a strong curl upward. Collies are house-hold pets in various countries.

COLLINS, MICHAEL (1890-1922), one of the most brilliant leaders in the struggle to free Ireland from British rule. While yet a boy he joined the republican movement, and as he was a ringleader in the uprising at Easter, 1916, he was imprisoned for nearly a year. He managed to escape the British dragnet for Irish revolutionary officials in 1918, and from that time was a Sinn Fein leader. His organizing ability almost alone brought peace and the erection of the Irish Free State in 1921; in the latter work Arthur Griffith was prominent, also. In the next year Collins was assassinated by a political enemy, on a peaceful Sunday morning while on his way to church.

COLLINS, WILLIAM (1721-1759), an English poet. While studying at Oxford he wrote his *Persian Eclogues*, and in 1746 he published his *Odes, Descriptive and Allegorical*. Although this volume was unsuccessful, it contained some lyrics which entitle Collins to high rank among eighteenth-century poets. Best known of his poems are the *Ode on the Passions*, the *Song from Cymbeline* and the ode beginning "How sleep the brave who sink to rest."

COLLINS, [WILLIAM] WILKIE (1824-1889), a well-known English novelist whose fame rests on his brilliant and well-constructed detective stories. He was a friend of Dickens, who had much to do with his decision to devote himself to literature rather than to the law, for which he had been educated. Among his best-known works are *Armadale*, *After Dark*, *The Woman in White*, *The New Magdalen*, *The Evil Genius* and *The Moonstone*.

COLLODION, a substance prepared by dissolving gun cotton in ether, or in a mixture of ether and alcohol, which forms a useful substitute for adhesive plaster in the case of slight wounds. When the fluid solution is applied to the cut or wound, it immediately dries into a semitransparent, tenacious film, which adheres firmly to the

part, and under it the wound or abrasion heals without inflammation. In a slightly modified form collodion is also employed as the basis of a photographic process called the *collodion process*. The common small toy balloons are made of collodion. A solution of it is poured into a flask, which is then rolled around so that the collodion will form in a coating of equal thickness over the inside: then the air is exhausted from the flask and the collodion film pulls off and is easily removed.

COLOCASIA, *kolo ka'shi a*, a genus of plants, native of the East Indies, whose tubers contain much starch-like matter which is used as a food after the acrid juice has been separated by boiling or washing. In the Pacific Islands the colocasia is called *taro*; in Hawaii, *poi*; in Japan, *satoimo*; in China, *yu-tao* and in Central America, *oto*.

COLOGNE, *ko lone'*, a city of Rhenish Prussia, on the left bank of the Rhine, forming, in connection with Deutz, a fortress of the first rank. There are many fine old buildings, as well as excellent modern ones, but the most important edifice of all is the cathedral (see below).

Cologne was one of the most important members of the Hanseatic League and one of the most populous cities of Europe until the sixteenth century, when a decline set in. With the nineteenth century, progress began. The old part of the city dates from the third century, and it was built on the shore of the river. In modern times a new city has grown up in rough semi-circular form around the old town, and it ranks with other world cities in beauty. It manufactures almost every commodity known to modern industry, and include heavy machinery, chemicals, sugar, tobacco products, Cologne water, and paper. Cologne is now third in size among German cities. Population, 1933, 756,000.

Cologne Cathedral, one of the finest specimens of Gothic architecture in the world. It was begun in 1248 and was not completed until 1880. It is in the form of a cross 444 feet long, and has two enormous towers, the loftiest church towers in Europe, each 512 feet high. The roof is 200 feet high and has a central tower 350 feet high. In the interior are pillared aisles, beautiful altars, mosaics, paintings, statuary and magnificent windows of stained glass. In the treasury are kept very many valuable jewels, precious stones and many sacred reliques.



COLOMBIA, at the northeastern extremity of South America, is a republic, fifth in area among the countries of that continent. Previous to 1902 it included in its area the present republic of Panama, geographers now class the latter as a part of the North American continent. The exact area of Colombia is uncertain, but it is about 447,535 square miles, and the population (1928) is 7,851,000, about eighteen people to the square mile. This census includes practically all Indians in the country, whose number is given as about 70,000. The language of Colombia is Spanish (see DEMARCATON, LINE OF). The country was named in honor of Christopher Columbus, and has been inhabited by white men, at first few in number, almost from the time Europe was able to take advantage of the discovery of the continent. The capital city is Bogota (which see).

Surface and Drainage. The surface is very mountainous. The Andes, entering from Ecuador, divide in southwest Colombia into three branches, namely, the west range; the central range, which has the highest peaks in Colombia, including the volcanoes Tolema, 18,000 feet high, Huila and Purace; the eastern range, a continuation or branch of the central, from which it is separated by Magdalena River. This chain divides in the north, the eastern extending into Venezuela, and the western extending northward, joining the Sierra Nevada de Santa Marta near the coast. There are many rivers, the chief of which is the Magdalena, which has a length of 1,000 miles and is navigable for almost 850 miles. The tributaries are the Cauca and the Atrato, the Meta and the Guaviare, the latter two tributaries of the Orinoco, and the Negro and Japara, both affluents of the Amazon.

Climate. The climate varies in different parts. The coast plains are generally hot and damp, while the central plateaus and high tablelands have a pleasant and healthful climate and abundant rains. In the southwest portion the plains are exceedingly dry.

Mineral Resources. Colombia is rich in minerals. The mountainous regions abound in gold and silver. The chief center of gold mining is Antioquia, of silver, at Tolima and Cauca. The petroleum output has risen to 16 million barrels a year. Iron, copper, lead and salt are found to some extent. Emeralds of an exceedingly fine quality are mined in the State of Boyaca. There is a good deal of coal, but as yet it has not been mined to any considerable extent.

Agriculture. There is a vast area of good soil, but only a small portion is under cultivation. Agriculture is the chief industry, but most of it is yet carried on by primitive methods. Coffee, tobacco and sugar cane are grown in the hot regions, and wheat, corn and barley in the more temperate parts. In the deep forests vegetation is very luxuriant. The banana tree is found in most parts, and that fruit is an important article of export. So inadequate is transportation that it costs more to bring wheat to the coast towns from the interior than to bring it by vessel from the United States.

Transportation. There are not many railroads, owing to the mountainous character of the country, there are now more than 2,000 miles in operation. The absence of good country roads (there are only 4,200 miles of motor roads), most of them being merely beaten tracks, is partly compensated for by navigable rivers. There is airplane service.

Education. Education is largely maintained by the state. Besides the public schools, there are a university at Bogota (founded in 1572), a national institution for workmen and a school of arts and trades. The elementary schools are free, but attendance is not compulsory. Seventy-three per cent of the people are unable to read. Indians and negroes comprise most of this total.

Government. The President and Vice-President are chosen for four years by an electoral college. There is a Council of State of six members. The Congress consists of two houses, a Senate of fifty-eight members, and a House of Representatives of 131 members. Each of the fourteen departments into which the republic is divided has a governor appointed by the President and an assembly elected by the people.

History. In 1536 the united forces of the Spaniards overcame the Indians who dwelt around this region, and after this Spanish

settlements rapidly grew up. In 1740 a viceroyalty under the name of New Granada was formed, comprising the present Colombia. In 1811 an insurrection against Spain broke out, and nine years later independence from Spain was secured. In the same year New Granada and Venezuela united to form the republic of Colombia, and Ecuador joined later; but this union lasted only until 1831, when the republic of New Granada was formed. There followed revolutions and political strife, with frequent changes in the constitution, until 1861, when a federal constitution was adopted and the name was changed to the United States of Colombia. In 1886 the present centralized republic was formed, the states now becoming Provinces. The Province of Panama broke away in 1903, and formed the Republic of Panama.

In 1921, the United States paid \$25,000,000 to Colombia as a partial recompense for the loss of Panama, which declared its independence when Colombia refused to ratify a canal treaty with the United States.

COLOMBO, capital of the island of Ceylon, and its principal west-coast port. It has a protected harbor, and is popular as a bunkering point on the sea route to and from Australasia and the Far East, and has an extensive trade of its own. Chief exports are rubber, tea, and coconut products; imports include iron and steel, canned goods, and piece goods. There is a Roman Catholic and an Anglican bishop. Population, 1931, 284,155; the inhabitants are cosmopolitan in character, chiefly Singhalese and Tamils.

COLON, *ko'lon'*, a seaport of the Republic of Panama, on Manzanillo Island, on the north coast of the Isthmus of Panama. It is at the Atlantic end of the Panama Canal, and is also the terminus of the Panama Railway. The city was founded in 1850, and then named Aspinwall, in honor of a New York financier, who was chiefly responsible for the construction of the first railway across the isthmus; later it was renamed Colon, for Christopher Columbus. The land on which the city is built belongs to the Panama Railway, under the terms of its original franchise, and the railway is now the property of the United States government. Adjoining Colon, on Limon Bay, is the American town of Christobal, where have been located great refrigeration plants and railroad shops.

The harbor of Colon, which is deep but exposed, has been improved by the erection

of a long breakwater, and the city is now a port of call for over a dozen lines of steamers. Unlike most Central and South American ports, it has good docks and piers, at which steamships may take on and discharge cargoes. Although Colon, for purposes of government, is in Panama, all matters of sanitation and quarantine are under the control of the United States. The city was formerly extremely unhealthful, but United States sanitary engineers under General Gorgas made it entirely safe as a place of residence. Population, 1920, 40,886; 1930, 57,161.

COLON, *ko'lohn*, a portion of the large intestine, consisting of three parts, known as the *ascending*, *transverse* and *descending* colons. The colon tube begins on the right side of the abdominal cavity where the small and large intestines join, and ends in the lower left side of the abdomen, where it communicates with the rectum. See illustration, accompanying the article **ABDOMEN**.

COLONEL, *ku'nel*, a military officer in command of a regiment. He ranks below a brigadier-general and above a lieutenant-colonel, who is above a major. The rank corresponds to captain in the navy.

In the United States Army, the colonel wears a silver eagle with spread wings on his shoulder straps as insignia of rank.

In Canada, the colonel wears, either on shoulder straps or on sleeves, a crown and two stars. The colonel has rank corresponding to a captain in the navy. See **ARMY**; **RANK**.

COLONIES AND COLONIZATION. A colony, in a strict sense, settlement formed in one country by the inhabitants of another, but now it is used loosely to describe a territory distant from, but dependent upon, another country. The ambition to extend territory, the desire to increase wealth, and, latterly, the necessity of providing an outlet for the surplus population of Europe, have been the chief motives in colonization.

Portuguese Colonies. The Portuguese were the first great colonizers among modern states. In 1419 they discovered Madera, the Azores and the Cape Verde Islands; soon after they reached the Congo and the Cape of Good Hope, and before 1500 Vasco da Gama had landed at Calicut, in India. The first Portuguese colonies were garrisons along the coasts where traders stopped, but real colonies were established in Ceylon in 1505

and in the Moluccas in 1510. Brazil was discovered in 1499, and it fell to Portugal by the Bull of Demarcation and was colonized about 1530. Bad government at home and the subjection of the country to Spain caused the loss of most of the Portuguese colonies. The Portuguese now possess several territories in India, China and the Indian Archipelago. In Africa they possess the Cape Verde Islands, settlements along the coast and other islands amounting in area to about 700,000 square miles.

Spanish Colonies. Soon after the Portuguese, the Spaniards commenced the work of colonization. In 1492 Columbus discovered the island of San Salvador. Hayti, or San Domingo, Porto Rico, Jamaica and Cuba were soon colonized; before the middle of the sixteenth century Mexico, Ecuador, Venezuela, New Granada, Peru and Chile were subdued, and Spain took first rank among the colonizing powers of Europe. But the Spaniards never really attempted to develop the industrial resources of the subject countries. The pursuit of mining for gold or silver occupied the colonists almost exclusively, and the enslaved natives were driven to work themselves to death in the mines. Cities were founded, at first along the coasts, for the sake of commerce and as military posts, and afterwards in the interior. The colonial intercourse with Spain was confined to the single port of Seville, afterward to that of Cadiz. When the power of Spain declined, that country lost most of its colonies. At the close of the Spanish-American War the Philippines and Porto Rico were ceded to the United States and Cuba became an independent republic. The Ladrone Islands were sold to Germany in June, 1899, and Spain now owns only a few small places in India and Africa.

Dutch Colonies. The ill-will of Philip II, who excluded Dutch vessels from the port of Lisbon, forced the Dutch to import directly from India or lose the large carrying trade they had acquired. Several companies were soon formed, and in 1602 they were united into one, the Dutch East India Company, with a monopoly of the East India trade and sovereign powers over all conquests and colonies in India. The Dutch rapidly deprived the Portuguese of nearly all their East Indian territories, settled a colony at the Cape of Good Hope (1650), established a West India Company, made extensive con-

quests in Brazil (1623-1660), which were soon lost, and more permanent ones on some of the smaller West India islands. The growing power of the British and the loss of Holland's independence during the Napoleonic wars were heavy blows to the colonial power of the nation. But the Dutch still possess numerous colonies in the East Indies, among which the more important are Java, Sumatra, Dutch Borneo, the Molucca Islands and part of New Guinea; they also possess several small islands in the West Indies, and Surinam.

British Colonies. No other colonizing power of Europe has had a career of such uniform prosperity as Great Britain. The English attempts at colonization began nearly at the same time as the Dutch. After many fruitless attempts to find a northeast or northwest passage to the East Indies, English vessels found their way round the Cape of Good Hope to the East Indies in 1591. The East India Company was established in 1600. The ruin of the Mogul Empire in India after the death of Aurengzebe (1707) afforded the opportunity for the growth of British power, as the British and French were compelled to interfere in the quarrels of the native princes and governors. By the victory of Clive at Plassey in 1756, France was practically driven from India, and England laid the foundation of an exclusive sovereignty there. By the middle of the nineteenth century the British territory embraced nearly the whole of India, which was still under the government of the East India Company—a mercantile company, controlled, indeed, by Parliament, but exercising many of the most important functions of an independent sovereignty. On the suppression of the Indian mutiny (1857-1858) the government of India was transferred to the Crown by act of Parliament in 1858.

The discoveries of the Cabots, following soon after the voyages of Columbus, gave the English Crown a claim to North America, which in the reign of Elizabeth led to colonization on a large scale. Raleigh's settlement on Roanoke Island (North Carolina) in 1585 failed to become permanent, but in 1607 the colonists sent out by the London Company to Chesapeake Bay founded Jamestown in Virginia. The next great settlement was that of the Pilgrim Fathers, who landed December 21, 1620, in Massachusetts Bay. The colonization of New

Hampshire, Maine, New Jersey, Connecticut, Rhode Island, Maryland, Pennsylvania, the Carolinas and Georgia followed within a century, and, meanwhile, New Amsterdam was seized from the Dutch, and its name was changed to New York. Colonies were early established in the West India islands; Newfoundland was taken possession of in 1583 and colonized in 1621; Canada was surrendered to Britain by the Treaty of Paris in 1763. In 1764 began the disputes between Great Britain and its North American colonies, which terminated with the independence of the United States, Canada still remaining a British dependency, but now is a Commonwealth of the Empire.

Australia was discovered in the beginning of the seventeenth century. The first settlements of Britain there were penal colonies, the first being established in New South Wales about 1770. In 1851 the discovery of the abundance of gold in Victoria gave a great impetus to the prosperity of the Australian colonies. Australia is now a Commonwealth, entirely self-governing, but an important part of the British Empire. In 1874 the Fiji Islands, and in 1884 part of New Guinea, were annexed as crown colonies. In South Africa, Cape Colony, first settled by the Dutch in 1652, became an English colony in 1814, and English influence there has since been steadily expanding, now extending over a large part of South, East and North Africa. In Europe Great Britain has a few colonies acquired for military reasons—Gibraltar in 1704, Malta and Cyprus in 1914. It is estimated that the existing British colonies and dependencies embrace about one-sixth of the land surface of the globe and about one-fifth of its population.

French Colonies. *France* was somewhat late in establishing colonies. Champlain was the pioneer of the French in the exploration of the North American continent and founded Quebec in 1608. Colbert purchased several West India islands, as Martinique, Guadeloupe, Saint Lucia, and sent out colonists in 1664 to Cayenne. In 1670 the East India Company, formed by Colbert, founded Pondicherry, which became the capital of extensive possessions in the East Indies. At the beginning of the eighteenth century *France* had settlements in Canada, Nova Scotia and Newfoundland and the most flourishing of the West India islands, and the country seemed to have a

prosperous career before it in India. Before long, however, the rival interests of British and French colonists brought about a conflict, which terminated in the loss of Canada and other North American possessions, as well as many of the West India islands and a large part of India. *France* has colonial possessions at present in India, Cochin-China and southeastern Asia, New Caledonia, and other islands in Oceania, in Africa and in the West Indies.

Other Colonies. Within recent years *Germany* made an effort to take rank as a colonial power, and it acquired territories in Africa and in the islands of the Pacific, as well as posts in China. All these were taken from that country in the early part of the World War by the British, Japanese and Australians. *Denmark*'s northern dependencies, Greenland and the Faroe Islands, though of considerable extent, are of small value; Iceland is practically independent. In the West India islands Denmark had Saint Thomas, Saint Croix and Saint John until 1917, when the Danish West Indies were sold to the United States, and renamed Virgin Islands.

Since the late nineteenth century the *United States* has taken rank as a colonizing power, having gained in 1898, by the Spanish-American War, the island of Porto Rico in the Caribbean Sea and the Philippines in the Pacific; the same year the Hawaiian Islands were acquired by annexation, and since that time other small islands have been added. The latest acquisition is the Virgin Islands. The Philippines will be independent in 1945.

Related Articles. For further details see, in the articles on the countries mentioned, the subhead Colonies

COLOR, *kul'ur*, the name used to distinguish the different sensations that lights produced by various rates of vibration give to the eye. White is composed of seven colors, violet, indigo, blue, green, yellow, orange and red. These are known as the *prismatic* colors (see *LIGHT*, subhead *Spectrum*), and all other colors are produced by combinations or modifications of the prismatic colors. The color of bodies is due to their different powers of reflecting light. A red body reflects the red rays and absorbs all the others; a blue body reflects only the blue rays; a green body, the green, and so on.

The *primary* colors are those from which

all other colors can be made by mixing. They are blue, yellow and red. The remaining prismatic colors are known as *secondary*, because they can be produced by mixing two of the primary colors, as blue and yellow produce green; red and yellow, orange, and blue and red, violet or indigo, according to the quantity of red used. *Complementary* colors are those which, when mixed, produce white, any one of the primary colors is a complementary color when mixed with the other two.

In the scientific sense of the word, white and black are not considered colors. A white body reflects all the rays, and the black body absorbs all without separating them. This, however, is only theoretical. In all cases some rays are absorbed and some reflected.



COLORADO, the thirty-third state in the Union in respect to population. It was admitted August 1, 1876, and consequently is known as the CENTENNIAL STATE. Many persons think of Colorado as belonging to the far west, although the eastern boundary of the state is only 200 miles west of the geographical center of the United States. Colorado is about the size of Italy, is larger than Great Britain and is nearly twice as large as the combined area of the New England states. Its area is 103,948 square miles; it is about 380 miles long and 280 miles wide. The census of 1930 gives the population as 1,035,791, indicating an increase of about 1,000 per year for the preceding 10 years.

Surface and Drainage The surface of Colorado is naturally divided into three parts. The eastern part consists of the great plains extending from the eastern boundary to the foothills of the Rocky Mountains. These plains vary in height from 4,000 to 6,000 feet. Through the west-central part of the state run the Rocky Mountains with their

lofty peaks, great parks and the Continental Divide. The western part is a rugged plateau nearly all of which is a mile or more above sea level.

Colorado is famous for the large number of her lofty peaks and the grandeur of her mountain scenery; there are within the state more than 333 peaks with an altitude of over 10,000 feet and more than 30 of them are 14,000 or more feet high. Mt. Massive and Mt. Elbert are the two highest, each being 14,420 feet above sea level. They are surpassed by two peaks in Alaska and two in California and by no others in the United States. Pikes Peak (14,108) is the most celebrated, its summit is reached not only by a mountain railroad but also by one of the most wonderful automobile roads in the world.

Between the various ranges of mountains and their towering peaks is included that part of the state known as the Rocky Mountain Parks. These consist of open grass land which is generally level or undulating, the common idea of a park with trees does not apply. The altitude varies from 7,800 to 9,200 feet. San Luis Park is larger than Massachusetts. North Park is the smallest, but it is nearly as large as Rhode Island.

In the mountainous part of the state the rivers are usually rushing torrents, pouring their waters down from the melting snow of the many lofty peaks. The principal rivers are the South Platte, the Arkansas, the Rio Grande, the Colorado, the Yampa, the White, the Green, the Gunnison, and the Uncompahgre. On the great Continental Divide rivers whose waters reach the Atlantic Ocean and rivers whose waters reach the Pacific often have their sources within a mile or so of each other.

Climate. Reports concerning Colorado climate are very confusing to Eastern people. This is due to varying elevations, to the presence or absence of moisture in the different parts of the state, and to the remoteness or proximity to high mountains. The United States authorities divide Colorado into five zones of temperatures. In these zones the annual average temperature varies from 35° or less in the high altitude to 50° or higher in the Arkansas valley and in the protected valleys of the mountains.

The climate is healthful, dry, and invigorating. In all parts of the state there is an abundance of sunshine, in an average year there are at least 300 clear days. Fog

in Colorado only occurs about once a year in the western part of the state, about three times a year in the eastern foothills, and somewhat more frequently in the eastern portion of the state. The summer sun is frequently very hot, but prostration from heat is practically unknown.

Mineral Resources. From the time of the Louisiana Purchase various reports were made concerning the discovery of gold in the Rockies, but no definite operations were undertaken until 1858. During the first half century of its history the leading industry of Colorado was mining some of the precious metals. In later years production amounted to as much as \$5,000,000 in a year; the yield was gold, 242,008 ounces; silver, 2,242,646 ounces; copper, 10,000,000 pounds; lead, 4,500,000 pounds; zinc, 2,491,000 pounds. Other minerals mined in later years are molybdenum, tungsten, manganese, fluorspar and other minerals used in the manufacture of war materials. In one year the production of radium was valued at \$2,500,000. The coal deposits are extraordinary; the value of the mined product embracing every variety of coal is often \$10,000,000. Coal mines are found in 16 counties. Oil and gas are very important industries. The mineral springs have attracted a good deal of attention. The mineral by-products include sand-stone, limestone, clay and pyrite.

Agriculture. Colorado has approximately 60,000 farms; on these farms 8,500,000 acres are devoted to crops. Over half of the acreage is under irrigation. Dry-farming has greatly increased farm development. The variety of agricultural products is practically unlimited. In one year the value of leading crops was as follows: hay, \$12,700,000; corn, \$7,500,000; potatoes, \$6,284,000; wheat, \$3,455,000; barley, \$2,000,000; oats, \$1,160,000. In the production of sugar beets Colorado leads with an output of 2,624,000 tons. Fruit may be produced in almost any locality having an altitude of less than 6,000 feet, but the western slope leads in production, especially in peaches and apples. Gross income from crops has reached \$21,400,000 in one year. Stock-raising has flourished; the farms of Colorado support 1,526,000 cattle and 318,000 horses. The wool clip amounts to 12,489,000 pounds.

Manufactures. Nearly 14,000 factories produce goods worth \$183,500,000 in one year. Sugar, flour, meat-packing, canning,

manufacture of iron and steel products, stoves, cars and car wheels, rubber goods, automobile supplies, leather, soap, brick and pottery are among the industries of the state.

All the conditions in Colorado combine to insure a great future in the manufacturing industries of Colorado. It has an unlimited supply of coal, all forms of building material are here, and the possible supply of electric power by utilizing the mountain rivers is almost unlimited. On the other side of the Front Range the Grand River has been turned for several miles through a tunnel in the mountains; this gives an enormous waterfall which will produce great electrical power for all time to come. Denver receives its electric supply from this equipment.

Railroads. The first railroad in Colorado was the Union Pacific, built from Denver to Cheyenne in 1870. The steam roads cover 5,262 miles and the electric lines 227 miles. The mountain railroads extend through the most beautiful scenery; their construction is an exhibition of the greatest modern engineering skill. Nearly 10,000 miles of public highways are maintained, with about half of the mileage surfaced. There are 10 principal bus routes available. Colorado has more than 32 airports and landing fields.

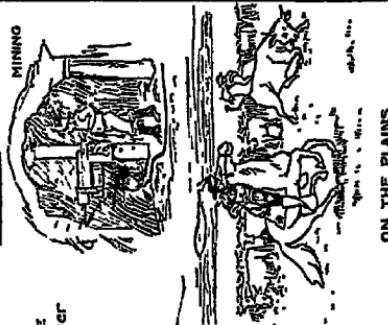
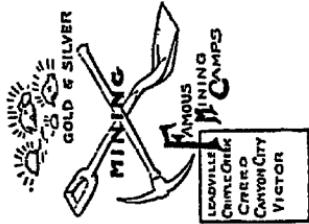
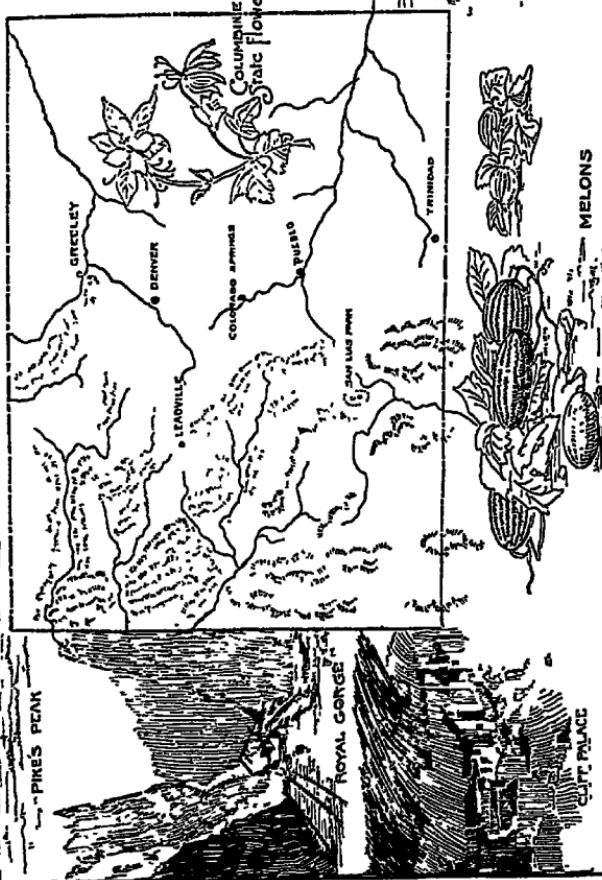
Government and Education. The government is similar to that of most of the western states. The members of the senate are elected for four years and those of the house of representatives for two years. The governor is elected every two years. A supreme court consists of the chief justice and seven associate justices. In 1912 a constitutional amendment was adopted providing for the recall of all elective offices. Colorado in 1893 was the second state to grant woman suffrage. Denver is the capital.

The University of Denver is the pioneer institution of higher learning in the state, it was founded as Colorado Seminary in 1864. Other institutions are the State University at Boulder, the School of Mines at Golden, the Agricultural College at Fort Collins, Colorado College, Colorado Springs, Loretto Heights College, Loretto; Regis College for Men, Dill School of Theology, Westminster Law School, all three at Denver; the teachers colleges are at Alamosa, Greeley and Gunnison, with a normal school at Denver. There are also 4 junior colleges.

Institutions. The state hospital for the insane is at Pueblo and the soldiers' and

COLORADO

"CENTENNIAL STATE"



Items of Interest on Colorado

The greatest mountain "parks"—North, South, Estes and San Luis—form a remarkable feature of the state; these are great plateaus, partly level meadows, partly forests, partly mountainous, lying east of the Continental Divide; Middle Park is west of it.

The timber line on the mountains is about 10,000 feet above the sea; the snow line falls at about 11,000 feet.

Large game is still abundant west of the Continental Divide and in the great parks, deer, elk and antelope, grizzly, brown and black bears are the most common.

There are about 12,000 miles of irrigation canals, which water nearly three-fourths of the improved farm lands.

Cripple Creek mining district is one of the most interesting areas on account of the diggings in the volcanic crater

The trees of Colorado may be easily grouped into five classes according to the altitude where they grow in largest numbers.

Questions on Colorado

What is the area of Colorado?

What are the three great physical divisions?

What are some of the best-known mountain peaks?

What are the "parks"?

Name four large rivers which have their sources in the state.

What can you say of the climate?

What large game is still abundant?

How does Colorado rank as a producer of beet sugar?

What are the principal mineral deposits?

What manufacturing industries are most important?

How many miles of railway are there in the state?

When were women granted the suffrage?

What agricultural products does Colorado afford?

What kinds of natural wonders are observed by the tourist?

sailors' home and the reformatory are at Monte Vista. The state prison is maintained at Canyon City while the industrial school for boys is at Golden and a similar school for girls is at Morrison.

Points of Interest. The eyes of the traveler are directed to the Garden of the Gods, Cave of the Winds, Seven Falls, Pikes Peak, Mt. Manitou Scenic Incline, the Ancient Cliff Dwellings, Rocky Mountain National Park with its 254,327 acres, Grand Lake at an altitude of 8,389 feet, Grand Mesa Forest, with its 700,000 acres, and the Mount of the Holy Cross, with the 111 lakes near it. The magnificent canyons are the canyon of the Grand River, the Black Canyon of the Gunnison and the Royal Gorge of the Arkansas River.

The great variety of climate has made the state an attractive habitat for an exceptionally large number and variety of wild birds

History. The name of the state, taken from that of the Colorado River, signifies red. The country was visited by Spanish adventurers in the sixteenth century, but was not settled. By the Louisiana Purchase the United States gained possession of about half of the territory of Colorado and the remainder was acquired from Mexico by the Treaty of Guadalupe-Hidalgo. It was explored by Zebulon Pike in 1806 and by Fremont in 1843. The discovery of gold in 1858 was followed by settlement in the regions of the mines, and Denver and Boulder were established. In 1861 the territory Colorado was organized from portions of Kansas, Nebraska, New Mexico and Utah, and after two acts for its admission as a state had been vetoed, it finally was admitted in 1876. Needs of the day have been met through modern legislation by which the state government has been reorganized and a new building and loan code has been formulated. The penalty for kidnapping has been fixed at life imprisonment. Laws have been passed establishing old age pensions, prohibiting the distribution of prison made goods, regulating the sale of intoxicating liquors, and suspending former anti-trust and "unfair competition" laws.

Related Articles. Consult the following titles for additional information

Boulder	Greeley
Colorado Springs	Parks, National
Cripple Creek	Pike's Peak
Denver	Pueblo
Fort Collins	Royal Gorge
Garden of the Gods	Trinidad

COLORADO, UNIVERSITY OF, an institution of higher learning at Boulder, incorporated by the territorial legislature in 1861. In 1876 the constitution of Colorado provided for its erection as a state university. It maintains colleges of arts and science, engineering, pharmacy, and music; schools of medicine, law, business and a graduate school. There is a summer session and a division for extension work. There is a faculty of over 300 and a student enrolment normally of about 3,500. The libraries contain over 330,000 volumes.

COLORADO RIVER, until 1921 considered as formed by the junction of the Grand and Green river, but in the year named Congress declared the Grand to be a continuation of the main river and the Green a tributary. Among the most wonderful natural objects in the world is the Grand Canyon of the Colorado in Arizona. The river flows southward through Utah into Arizona, forming the boundary between Arizona on one side and Nevada and California on the other. After a course of about two thousand miles from the source of the Green River it empties into the Gulf of California. By agreement of the states drained by the Colorado River the great Boulder Dam has been constructed in the Black Canyon, for the purpose of supplying irrigation and hydroelectric power. See GRAND CANYON OR THE COLORADO; IRRIGATION.

COLORADO RIVER, a river of Texas, rising in the northwestern part of the state. It flows in a southeasterly direction through the state and empties into the Gulf of Mexico, through Matagorda Bay. The chief towns on its banks are Bay City, Austin, La Grange and Bastrop. It is 650 miles long and is navigable up to Austin, a distance of 200 miles. The river provides valuable power, and its waters are used in irrigating the districts in its valley.

COLORADO SPRINGS, Colo., founded in 1871 and now third in size among the cities of the state, is seventy-five miles south of Denver and forty-three miles north of Pueblo. It is on the Denver & Rio Grande, the Atchison, Topeka & Santa Fé, the Missouri Pacific, the Colorado & Southern, and the Chicago, Rock Island & Pacific railroads. The beautiful scenery and healthful climate of the vicinity has made this section one of America's most popular pleasure and health resorts. Some of the

parks are world famous, particularly the Garden of the Gods (which see), containing 480 acres; other parks are North Cheyenne Canyon (300 acres), Monument Valley Park (200 acres) and Cheyenne Mountain Zoo.

The important industries are gold reduction mills, coal mining, the manufacture of advertising films, and the making of dairy products. The city is governed on the mayor-council plan, with a city manager. The important buildings include Grace Church, Stone Chapel, and a city auditorium. The Union Printers' Home, founded by George W. Childs (which see) is valued at \$1,000,000; the Modern Woodmen of America's sanitarium was established in 1909 at a cost of about \$1,000,000. Colorado College and the state school for the deaf and blind are in the city. There are several large hotels, numerous hospitals, and a large number of costly residences. Colorado City was annexed in 1917. Population, 1920, 30,103; in 1930, 33,237, a gain of 10.4 per cent.

COLOR BLINDNESS, an optical defect which prevents the recognition of certain colors. It is incurable, may be partial or complete, and may affect one or both eyes. While this defect is sometimes suffered by persons whose vision is otherwise normal, irregular refraction very commonly accompanies color blindness. The most common forms are known as *green blindness*, in which the affected eye fails to recognize green, that color usually appearing as yellow, and *red blindness*, in which the eye cannot recognize red but sees it as a bright yellow or a pale yellow. Some eyes are so defective that they fail to recognize three colors, while occasionally one is found who can recognize only black and white. Color blindness may be born or acquired.

The continual straining of the eye in observing objects at long distances sometimes produces color blindness of the objects continually looked for, as in the case of trainmen on railways who have followed the road for a long time. These men frequently become color blind to red and green. In some states people who are color blind may not drive automobiles.

COLOSSEUM, *kolōsē'um*, a name given to the FLAVIAN AMPHITHEATER in Rome, a large edifice for gladiatorial combats, fights of wild beasts and similar sports. It was begun by Vespasian and finished by Titus, A.D. 80. The outline of the Colosseum is

elliptic, the exterior length of the building being 620 feet, its breadth, 513 feet, and its height, 157 feet. It is said to have seated 87,000 people and to have had standing room for 20,000 more. The arena, or central space, measured 280 by 176 feet and was enclosed by a low wall, a protection against the wild beasts. The flooring was boards covered with red sand to soak up blood. Underneath were rooms for men and animals.

The exterior of the building was decorated by three rows of columns, the first story with Doric, the next with Ionic and the third with Corinthian columns. Down to the sixth cen-



THE COLOSSEUM

"While stands the Colosseum, Rome shall stand, when falls the Colosseum, Rome shall fall, and when Rome falls—the world."

tury this imposing building remained almost uninjured, but at that time Theodoric, king of the Goths, had material taken from it for the construction of various buildings. The ruins today show four stories on one side only. The name is derived from the colossal statue of Nero, which for several centuries stood close by.

COLOSSUS, *ko los'us*, in sculpture, the name for any statue of very large size. The Egyptians produced many excellent examples of colossal statuary. Among these the most celebrated were those of Amenophis III, one of which was the so-called *Memnon*, whose vocal powers were fabled as one of the wonders of ancient times. The Greeks produced the most artistic colossi, among which were the bronze statue of Pallas Athene, on the Acropolis of Athens; the statue of Athene of gold and ivory, in the Parthenon at Athens, and the Olympian Zeus, sculptured by Phidias. One of the seven wonders of the world was the *Colossus of Rhodes*, representing Helios, the sun god. It stood astride the entrance of the harbor of Rhodes, a bronze figure probably ninety feet

high. The Romans followed the Greeks in this form of art and produced such colossi as the statue of Jupiter, on the Capitol, and that of Nero, 110 feet high, from which the near-by amphitheater derived its name of *Colosseum*. Among modern works of this nature are the *Germania* at Niederwald, on the Rhine; the statue of Peter the Great, at Petrograd, and the statue of *Liberty Enlightening the World*, New York (see *LIBERTY, STATUE OF*).

COLUMBIA, Mo., founded in 1821, is the county seat of Boone County, 144 miles west of Saint Louis, on the Wabash railroad and on a branch of the Missouri, Kansas & Texas system. There is a well-equipped local airport. The city is situated in a farming, fruit-growing and stock-raising district, and manufactures agricultural implements. The state university, the Missouri State College of Agriculture, Christian College, Stephens College, and a coaching school for West Point and Annapolis are located here. Because of its educational importance the city is called the "Athens of Missouri." Columbia has a Memorial Tower in honor of war dead, three hospitals, two golf courses, state hospital, an agricultural experiment station and a weather bureau office. Population, 1930, 14,967.

COLUMBIA, Pa., a city in Lancaster County, twenty-eight miles southeast of Harrisburg, on the Pennsylvania and the Philadelphia & Reading railroads and on the Susquehanna River. It is an important industrial center and manufactures stoves, castings, laundry machinery, silk goods, lace, dresses, and pretzels. Columbia was settled in 1726 by Quakers, and was known for many years as Wright's Ferry. It has two Catholic schools. Population, 1920, 10,836, in 1930, 11,349.

COLUMBIA, S. C., the capital of the state and its second city in size, and the county seat of Richland County, eighty-two miles northeast of Augusta, Ga., and 130 miles northwest of Charleston, on the Seaboard Air Line, the Southern, the Atlantic Coast Line and the Columbia, Newberry & Laurens railroads, and on the Congaree River. The city is in a cotton region, near extensive forests, and a canal from the river furnishes water power. The manufacturing of cotton products is the chief industry, there being six cotton mills; there are also four oil mills and three fertilizer plants. In

all, there are not far from 170 manufacturing establishments. The courthouse, the city hall, the statehouse, a Federal building costing \$265,000, and Y. M. C. A. and Y. W. C. A. buildings are noteworthy. There are business blocks of ten, twelve and fifteen stories in height. Columbia is the seat of the University of South Carolina, the Presbyterian Theological Seminary, the Columbia Female College (Methodist), the College for Women (Presbyterian), and Allen University and Benedict College, both for colored students. There are eight parks, three golf courses, and an airport.

It was settled about 1700 and remained small until the capital was moved here from Charleston in 1786. During the Civil War Sherman entered the city, February 17, 1865, and the following night three-fifths of the place was destroyed by fire. The city recovered rapidly after the war, and its recent development is a part of the general revival in the South. The commission form of government is in operation. Population, 1920, 37,524; in 1930, 51,581, a gain of 37.5 per cent.

COLUMBIA RIVER, one of the most important rivers in the United States, rising in the Rocky Mountains in British Columbia, flowing in winding course, chiefly through the United States, into the Pacific Ocean. Near its mouth it forms the boundary between Washington and Oregon. The salmon fisheries of this river are famous, and are the source of great wealth. The river is also noted for its beautiful scenery. Its chief tributaries are Clark Fork, the Spokane River and the Snake River. The Columbia River Highway (which see) a scenic road, has made the beauties of the Columbia familiar to thousands of visitors. The river is about 1,400 miles long, and it drains an area of 259,000 square miles.

COLUMBIA RIVER HIGHWAY, a wonderful paved highway extending 500 miles along the mighty Columbia River, west from Portland, Oregon, to Seaside on the Pacific Ocean and east from Portland to Pendleton discloses to the traveler some of the most awe-inspiring and majestic scenery in the world. Its beauty is a combination of the wonders of the Alps, the Rhine, and Southern Italy with the wild grandeur of the American Rockies. The construction of the roadway, completed in 1916, was, in itself, a remarkable engineering accomplishment. The

building of the Columbia Highway opened to view the great wonders of the Columbia Gorge and in ten miles of travel eleven beautiful water falls are passed. The total cost of the road was more than \$12,000,000.

COLUMBIA UNIVERSITY, in New York City, is one of the oldest educational institutions in the United States, and one of the largest in the world in enrolment.

The university traces its origin to King's College, a charter to which was granted by the British Crown in 1754. Ministers of five different denominations were named as governors of the college. The name was changed to Columbia College in 1784, in 1896 the name became Columbia University.

The university organization includes the schools of law, postgraduate medicine, applied science, mines, chemistry, architecture, journalism, business, dentistry, library science; graduate schools of political science, philosophy, pure science; colleges of engineering, pharmacy, a teachers' college, a college of physicians and surgeons, Columbia College (undergraduate school for men), Barnard College (for women), Seth Low



WILD COLUMBINE

Junior College; close relations are maintained with Union Theological Seminary.

The sixty-five buildings of the university are grouped along Morningside Heights,

overlooking Riverside Drive and the Hudson River; but the medical and pharmacy schools are conducted in quarters elsewhere. Columbia University Press, the extension courses, and the large home study department exert a wide influence beyond the limits of the campus. A building each is provided for students with French, or Italian, or German interests. The university also conducts research projects of outstanding importance.

The total financial resources of the university exceed \$152,000,000; of this amount \$57,800,000 is invested in buildings and grounds. The university libraries contain 1,500,000 volumes. The teaching staff numbers about 2,900. The annual registration of resident students is nearly 28,000.

COLUMBINE, the popular name of plants with five colored sepals and five spurred petals. The common columbine is a favorite garden flower and owes its name to the fancied resemblance of the petals to the form of doves, *columba* being the Latin word for *dove*. The columbine is the state flower of Colorado. In the United States several species grow wild and are known commonly, but erroneously, as honeysuckles.



adventure and a desire for geographical knowledge. About 1470 he came into possession of maps and papers which confirmed his opinion that the continent of Asia could be reached by sailing westward. Already he had become acquainted with the principles of navigation and had had considerable experience as a seaman, on voyages to England, the Canaries, Guinea and perhaps Iceland. For years he worked un-

ceasingly to gain financial support for his enterprise. He first went to wealthy individuals in Genoa, Venice and Lisbon, and then unsuccessfully implored the aid of King John of Portugal. He finally went to Spain, and for five years followed the court from place to place, pleading his cause at every opportunity.



CHRISTOPHER COLUMBUS
From a bust by an unknown sculptor, Capitoline Museum, Rome.

When almost disheartened by his many reverses, he stopped at a convent, La Rabida, where he accidentally met a well-known mariner, whose interest was at once aroused. A messenger was dispatched to the Spanish court, then encamped before Granada. The mission was successful, owing, probably to the brilliant termination of the war against the Moors, which ended in the fall of their great stronghold, Granada. By the aid of Ferdinand and Isabella, king and queen of Spain, he was enabled to start on a voyage to prove his theories, and on August 3, 1492, his small fleet—the *Niña*, the *Pinta* and the *Santa María*—set sail into an unknown sea.

The modern traveler, crossing the Atlantic in a week or so, and enjoying the comforts of the finest hotel, can little appreciate the perils of that voyage. Even more terrifying than the actual dangers of wind and wave were the superstitious fears of the sailors, for in those days the unknown seas were believed to be the abode of dreadful mon-

COLUMBUS

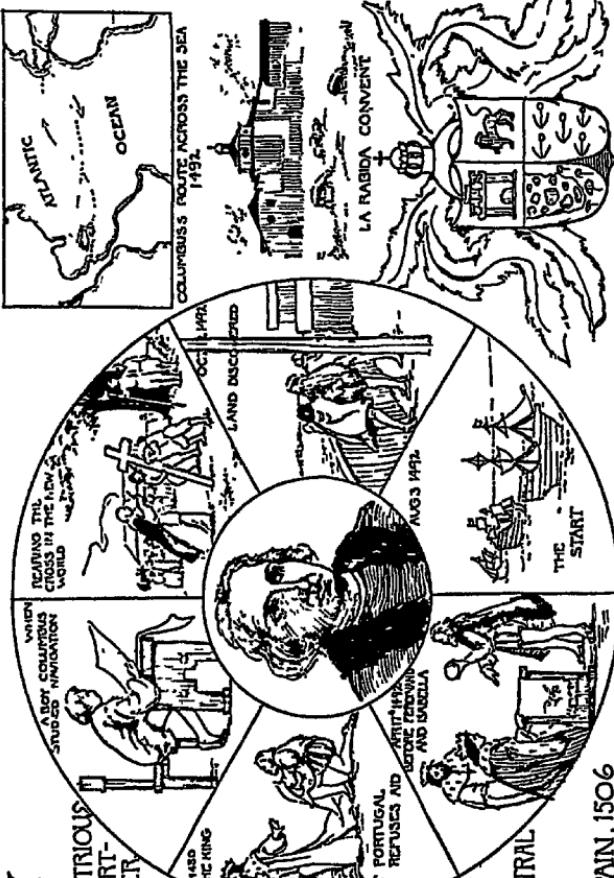
BIOGRAPHY

BORN: GENOA, ITALY, 1451
PARENTS POOR BUT INDUSTRIOUS
EARLY LIFE: SAILOR ON PORTUGUESE SHIP; MAP MAKER;
CHARTOGRAPHER FOR COURT OF SPAIN
LATER LIFE: ADVOCATE OF ROTUNDITY OF THE EARTH;
MEETS MARCHENA AT CONVENT OF LA RABIDA;
RECEIVES AID FROM QUEEN ISABELLA

VOYAGES

- 1-1492, SAN SALVADOR
- 2-1493, SAN DOMINGO
- 3-1498, COAST OF SOUTH AMERICA RETURNED IN CHAINS.
- 4-1502, COAST OF CENTRAL AMERICA

DIED: VALLADOLID, SPAIN, 1506

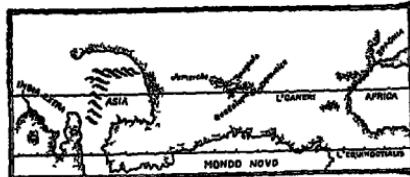


sters. Joaquin Miller has given us a suggestion of this in his inspiring poem, *Columbus*:

They sailed, and sailed, as winds might blow,
Until at last the blanch'd mate said,
"Why, now, not even God would know
Should I and all my men fall dead
These very winds forget their way,
For God from these dread seas is gone.
Now speak, brave Admiral, and say—"
He said: "Sail on! and on!"

After weeks of suspense the little band sighted land, and on October 12 they landed on one of the Bahama Islands, which Columbus called San Salvador. On October 28 he reached Cuba, which he thought was a part of Asia, and on December 6 he landed on Hayti (called Espaniola, or Little Spain). Believing that he had reached Japan, Columbus established a colony there, and named it La Navidad. In January, 1493, he sailed back to Spain to receive the praise of people and monarchs alike.

Three other voyages followed the first, on the third of which he discovered a number of islands and the mainland of South America. His colonization schemes in Espaniola, however, did not turn out well, and he had,



MAP OF THE WORLD
Made by Bartholemew Columbus, brother
of Christopher, in 1502

moreover, become an object of envy and the victim of petty intrigue. In fact, he was sent home in chains on the third expedition, but was released through the intervention of Ferdinand and Isabella.

In 1502 he undertook his fourth and last voyage, during which he sailed along the coast of Central America. An attempt to found a colony there ended in failure, and at Jamaica the ship proved unseaworthy. After waiting many weary months for help, the Admiral and his crew were taken to Spain in a vessel sent from Santo Domingo, Hayti. At home Columbus met with a disappointing reception, for the queen had died and the king had lost interest in him and his colonization plans. On May 20, 1506, he died at

Valladolid, ignorant alike of the import of his discoveries, and of the fact that his name would be held in highest honor in the centuries to come. His body was interred in a monastery in Seville, but in 1542 it was removed, with that of his son Diego, to the cathedral at Santo Domingo. In 1796 the bodies were taken to Havana, but in 1898, when Cuba was lost to Spain, they were restored to their original resting places in Seville.

COLUMBUS, GA., the county seat of Muscogee County, on the left bank of the Chattahoochee River 100 miles south of Atlanta. It is on the Georgia Central, and the Southern railroads. The principal industries are eleven large cotton mills, cotton gins and iron works. There is a Federal building, a large hotel built by 300 citizens, a Carnegie Library and a city hospital. The export trade in cotton is extensive. Population, 1920, 31,125; in 1930, 43,131, a gain of 38.6 per cent.

COLUMBUS, OHIO, founded in 1812 and since that time the capital of the state, is the third in size among Ohio cities and is the county seat of Franklin County. The city is 124 miles southeast of Toledo, 138 miles southwest of Cleveland and 116 miles northwest of Cincinnati.

The first railroad to reach Columbus was the Columbus & Xenia, built in 1849. The Norfolk & Western, the Pennsylvania, the New York Central, the Baltimore & Ohio and the Chesapeake & Ohio railways, with branch lines, now serve the city. One electric line and numerous motor bus lines operate out of Columbus. The Columbus airport and the municipal airport bring to the city many transcontinental planes and travelers and Columbus is in fact a focal point for east and west airways south of Cleveland. Ten air mail planes arrive and leave and 146 passenger trains leave daily.

The state capitol is situated in the center of the city. From it High Street, the main business thoroughfare, runs north and south. It is intersected at Capitol Square by Broad Street, which is 120 feet wide and which affords sites for many fine churches, public buildings and residences. The Columbus Civic Center, one of the most beautiful in the world, is the district which contains the far-famed American Insurance Union Citadel, the Y. M. C. A. building, the city administration building, the Ohio State Office

building, the Federal building and post office, the Columbus auditorium and the central police building.

Education. Educational institutions are numerous and flourishing: the Ohio State University, Capital University, Saint Joseph's Academy, Saint Mary's of the Springs, the Columbus Art School, the Battelle Memorial Institute of Metallurgy, the Ohio State Archaeological and Historical Museum are most important. Pupils enrolled in the elementary and high schools number over 47,000.

State institutions for the insane, feeble-minded, deaf and dumb and for the blind are established in the city; in fact, it contains 52 public welfare institutions. There are 228 churches, and over 1,000 acres are devoted to playgrounds and parks.

Industry. Manufacturing industries rank as follows: iron and steel products, foods, leather products, paper and printing, vehicles and parts, textiles, stone, clay and glass, lumber products, chemicals, non-ferrous metal products, caskets and morticians' goods, book and job publishing. The annual output amounts to more than \$140,000,000 in value. Under normal conditions 10 per cent of all wage earners turn out 40,000 pairs of shoes daily; other industries also have made astonishing records.

This progress is due in no small measure to the extensive researches carried on in the field of industry. The Battelle Memorial Institute, operated without profit, specializes in metallurgy and fuel. Orton Memorial Laboratory and the ceramics department at the Ohio State University are noted for research in ceramics.

The city is governed by a mayor and council. Population, 1930, 290,564.

COLUMN, *kol'um*, in architecture, a pillar, generally cylindrical in form, made of wood, stone, iron or other material and used to support a weight or to serve as an ornament. Strictly speaking, a column consists of a *base*, on which it rests; a *shaft*, cylindrical in form, and a *capital*, the portion surmounting the shaft. The Egyptians very early began to use columns extensively, as may be seen in the ruins of their temples. A great variety of designs and forms were employed, some columns being plain, smooth cylinders, elaborately decorated; others, square or polygonal in shape, and others, resembling a bundle of palms or lotus stems bound together. All were massive and heavy in ap-

pearance. The Persian columns were generally tall and slender.

The Greek Orders. The Greeks developed the forms of columns to their highest perfection, and their designs became conventionalized into the so-called *three orders of architecture*, in which the styles of the base, shaft and capital conform to certain fixed rules.

The *Doric* order (Fig. 1) is the oldest and simplest, and it is most frequently seen among the remains of ancient Greek architecture. It is distinguished by its want of a base and by its plain capital. The shaft is about five diameters high and is fluted, the flutes being few in number and joined together. The capital has two parts, of equal thickness, the upper a square block or plinth, called the *abacus*, resting upon a circular tablet, or *echinus*. The *entablature* is the portion above the capital and consists of three parts, the *architrave*, or portion directly above the column; the middle, or *frieze*, which is the only part decorated in the Doric order, and the cornice, or upper part. The best example of the Doric order of architecture is the Parthenon at Athens.

The *Ionic* order (Fig. 2) was invented by the Asiatic Greeks and was far more graceful and decorative than the Doric, though not elaborate. The Ionic column is light and slender, the shaft being about eight times its diameter in length. The capital is higher than the Doric, is ornamented and connected with the architrave by a thin ornamented abacus. The shaft is fluted and the twenty-four flutes are separated by narrow flat surfaces. The Erechtheum, on the Acropolis at Athens, is a good example of the Ionic style.

The *Corinthian* order (Fig. 3), though invented by the Greeks, hardly attained the dignity of an order till Roman times. It is really an Ionic column with a more elaborate capital, adorned with beautifully carved acanthus leaves. The Choragic Monument of Lysicrates at Athens contains fine examples of Corinthian columns.

The Roman Orders. The Romans borrowed their styles of columns from the Greeks and added the *Tuscan* and the *Composite* orders, besides perfecting the Corinthian base and entablature. The *Tuscan* was a development of the Doric, being perfectly plain, with an unchanged base and pedestal, and was invented by the Etruscans and other

early Italian races. The *Composite*, also called the *Roman* or *Italic* order, combined the Ionic and Corinthian orders and was especially pleasing to the Romans on account of its rich ornamentation. The use of the arch among the Romans compelled the build-

COMANCHE, *ko man'che*, an Indian tribe, which formerly roamed through the region between Colorado and Mexico. The Comanche were excellent horsemen and extremely warlike, carrying on bitter warfare with the white people. About 1,000 of them

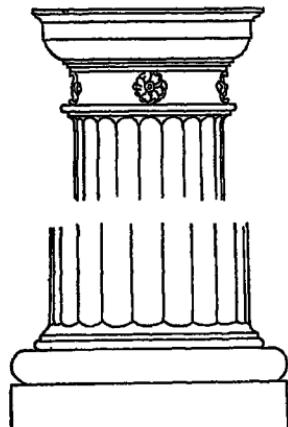


FIG. 1

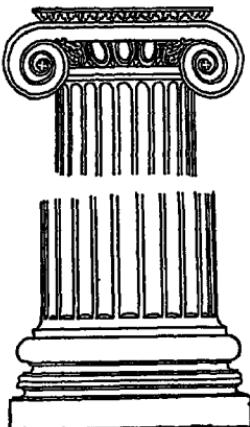


FIG. 2

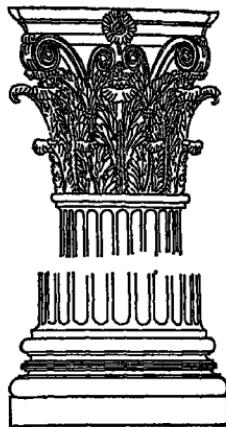


FIG. 3

ing of heavy piers to support the structure, as slender columns would have been too fragile, and thus the column came to be used merely for decorative purposes. Columns were often embedded in the masonry between the arches or attached to the faces of the piers and ornamented with beautiful designs.

Other Forms. Early Christian and medieval European architecture made free use of the column and introduced varied forms, especially in the shafts, which were often spiral, twisted or knotted, and were employed more often in groups or clusters than singly, chiefly as supports for arches. They were a feature of interior architecture, rather than exterior, as was the case with the Greeks. In modern architecture the column plays a subordinate part, both in decoration and usefulness.

Columns standing alone, unconnected with any building, have been erected at all times as monuments to commemorate important names and events, though they had at first only a religious significance. The Romans especially excelled in these monuments, the chief of which are the Column of Trajan and the Column of Antonine. See *JULY, COLUMN OF; TRAJAN'S COLUMN*.

are now on a reservation in Western Oklahoma.

COMBUSTION, or **BURNING**, in the ordinary sense of the word, is the union of some substance with oxygen, the union producing light and heat; for example, when wood or paper burns there is a bright flame and considerable heat. The term may be used, however, to mean the chemical union of any two substances, so as to give heat and light. The amount of heat given out by burning substances depends on their chemical composition and on the way the elements are combined. Heat may be produced rapidly, as when phosphorus is burned in the air and a flame results, or it may be formed slowly, as when phosphorus slowly combines with oxygen and is said to oxidize slowly. The amount of heat produced in each case is the same, and both are said to be in a state of combustion.

The products of combustion in most cases are gases and some solid matter. In early times it was thought that when a substance burned it was destroyed; but when chemists were able to collect the gases that came off from a burning body and analyzed them, it was found that such was not the case.

Nothing is destroyed. The form is merely changed

Spontaneous combustion is accidental burning of a substance caused by the evolution of heat through chemical action within the elements comprising it.

COMEDY, *kom'e di*, a form of drama in which the subject matter is less serious and the treatment less dignified than in tragedy, and in which the outcome is happy. It is in general less exaggerated in its humor than the farce or the burlesque (see DRAMA). The following are some comedies that more modern writers have not equalled.

Man and Superman	Shaw
The Little Minister	Barrie
The Mind-the-Paint Girl	Pinero
She Stoops to Conquer (1773)	Goldsmit
The Rivals (1775)	Sheridan
The School for Scandal (1777)	Sheridan
Comedy of Errors (1594)	Shakespeare
Merchant of Venice (1597)	Shakespeare
Much Ado About Nothing (1597)	Shakespeare
As You Like It (1599)	Shakespeare
Twelfth Night (1602)	Shakespeare
Rip Van Winkle (1866), Jefferson and Boucicault	

COMENIUS, *kom'e nus*, JOHN Axos (1592-1671), a Moravian clergyman, ranking as the greatest educator of his day. He began his career as a teacher in the school of the Bohemian Brethren in Moravia, and afterwards became a preacher and assumed charge of a school in his parish. After the Thirty Years' War he settled in Poland and assumed the direction of a gymnasium. It was while holding this position that Comenius published his first great work, *The Gate of Tongues Unlocked*.

Comenius can justly be considered the originator of methods and principles in general use at the present day. He divided schools into four classes: the mother school, which was the home, the vernacular school, or the primary school; the Latin school, and the university. He believed in the study of the mother tongue, the various branches of natural science and natural history. He also advocated the development of the child's moral and spiritual nature along with his intellectual powers, and he believed in physical training and equal education for both sexes.

COMETS, *kom'ets*, heavenly bodies which move with incredible speed from or toward the sun, in remarkable orbits. The appearance of a comet is always a matter of intense interest in the regions of the earth

where it is visible, as few can be discerned by the naked eye. To the eye the comet appears to be composed of three parts: a star or bright spot, called the *nucleus*; a foggy mass surrounding this, called the *coma*, and the field of light, or *tail*, which follows the main comet. The tail is usually bright and narrow near the head, but it widens into a fan-shaped appendage farther from it. While the comet is approaching the sun, the tail trails behind, but as the comet goes away from the sun, the tail precedes it. The three parts are not always present, however, for sometimes a comet may seem like a thin cloud with a bright spot near the muddle, or even like a small hairy mass.

Comets vary greatly in brilliancy, some being exceedingly bright, but only about thirty of such appear in a century. By means of the telescope new ones are continually being discovered. Some of these bodies travel around the sun in elliptical orbits; others appear from some unknown source, go toward the sun, pass around it and then depart on a line nearly parallel with the one on which they approached, while a third class, after going beyond the sun, leave it on a line which diverges from the one of their approach. It is evident that comets traveling in either of the last two orbits will never again approach the sun unless they are attracted from their respective courses.

No astronomer knows with certainty the exact composition of a comet or its origin; it is hard to tell what force has sent some of them from some other system, apparently, into this one of ours for a time, but the astronomers can predict the return of comets which have once appeared, if they are of the type that do return. It is supposed that the nucleus is composed of hard matter perhaps meteoric stones, and that the tail is gaseous, not necessarily itself in combustion, but perhaps bearing only reflected light of the sun. One comet at least has been known to divide into two and then to disappear, and it is thought that others are fading away. Of the comets that have been seen thus far, *Halley's comet*, which was discovered in 1682 and remained in sight for about a month, is the most important. Records show that it appeared in 1456, 1531 and 1607. It appeared again in 1759, 1835 and 1910. Upon observations of this comet

much of the modern theory is based. Other comets of importance are *Lexell's comet*, which was seen in 1770, but never reappeared; *Biel's comet* (1772, 1805, 1826, 1845), which later broke into two parts and then disappeared; and *Encke's comet* (1786). The last returns at irregular intervals of about three years. The most remarkable and brilliant of all was *Donati's comet*, which appeared in 1858. This will probably return in about the thirty-eighth century. In 1843 a very remarkable comet appeared, passing so near the sun that it probably went through the outer vapor of that body. In 1880 a similar comet appeared, apparently in the same orbit, and again in 1882, a third, to all appearances exactly similar to the two preceding. These are the first cases on record where several comets have been found in the same orbit, following one another in close succession.

COMIC OPERA, a form of operatic entertainment in which the subject matter is farcical and the music bright and melodious. The true comic opera, represented by the series produced by Gilbert and Sullivan, is a burlesque on the more serious form of opera. Among comic operas of genuine merit are *The Mikado*, *H. M. S. Pinafore* and *Pirates of Penzance*, by Gilbert and Sullivan; *Rob Roy* and *Robin Hood*, by Reginald De Koven; and *Babes in Toyland* and *Mlle. Modiste*, composed by Victor Herbert.

A modern and very popular variant of the real comic opera is the so-called musical comedy, in which a feeble story serves as a basis upon which to build a spectacular entertainment of music and buffoonery. Expensive costumes, gorgeous scenery and "catchy" music are considered essential to the success of these entertainments. Occasionally a musical comedy of superior merit is produced, such as *The Merry Widow*, *The Chocolate Soldier* and *Sari*. The distinction between a high-class musical comedy and comic opera is, however, not always easy to make. The French term *opéra comique* is applied to a dramatic composition which it set to music, but contains spoken dialogue and is often of a serious character. To this class belong Beethoven's *Fidelio* and Weber's *Der Freischütz*.

COMITIA, *ko mish'i ah*, the name given in ancient Rome to the meetings of the people in which state questions were voted upon. The *Comitia Curiata* was the oldest of the

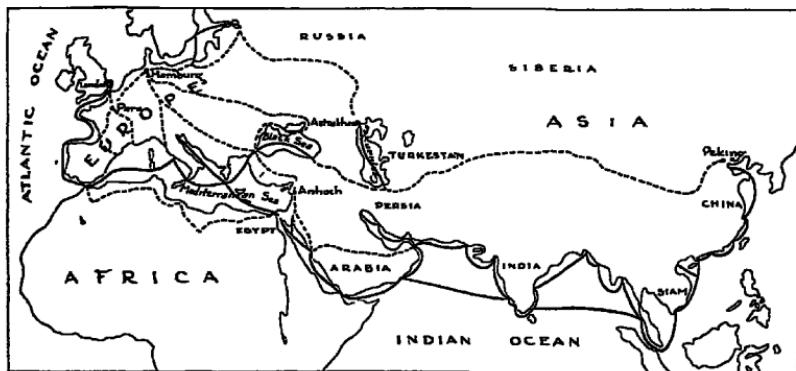
comitia and was made up of patricians only. For centuries, until the time when the plebeians grew strong in their demands for equal rights, the *Comitia Curiata* had the highest power in the state. Its importance grew less, however, as the *Comitia Centuriata* became more prominent. This second assembly admitted the entire free population of Rome, and the vote was taken by units containing one hundred or more persons, and called centuries. The third assembly, the *Comitia Tributa*, was an assembly of the tribes and was probably made up entirely of plebeians.

COMMANDER, a naval officer whose rank is below that of captain and corresponding to that of lieutenant-colonel in the army. The salary of a commander is \$3,500 to \$4,500 per year, according to length of service. This officer is placed in command of war vessels of small tonnage, but usually not of cruiser rank. See **NAVY**.

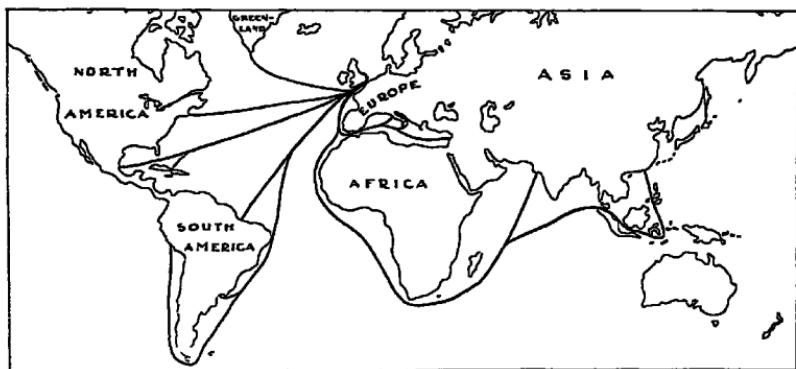
COMMENCEMENT, *kom mens'ment*, in colleges and universities of the United States, the day upon which degrees are conferred upon graduating students, upon candidates for postgraduate degrees, and upon recipients of honorary degrees. The term is commonly used to designate the exercises marking the close of secondary and elementary schools, but this use of the term is not strictly justified.

COMMERCE, *kom'mers*, the exchange of products, and specially, an exchange transacted between people remote from each other. The desire to secure trade in neighboring countries and indeed in distant lands beyond the seas has developed bitter rivalries among the nations and has been the most important cause of many of the world's great wars.

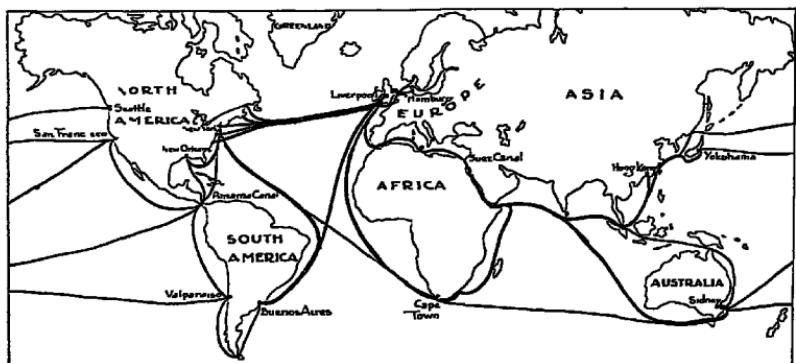
The first means of commerce was barter, the different producers meeting in person and exchanging their goods. With development of civilization and industry, exchanges became so common and complex that some men devoted themselves entirely to conducting exchanges. Thus arose the class known as merchants. During the Middle Ages these merchants began to congregate at certain times and places for the more economical exchange of their wares; so markets and fairs came into vogue. Eventually, these market places grew in importance and size until whole towns were given over to this trade and were licensed by the king. With the



Principal Trade Routes of the Mediaeval World by land and sea

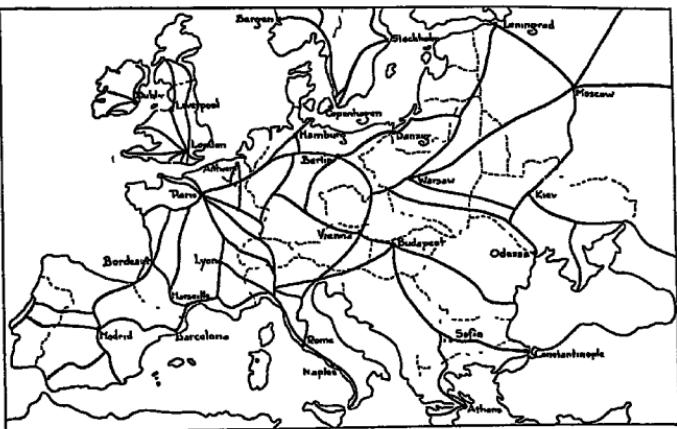


Principal Paths of Trade in 1700

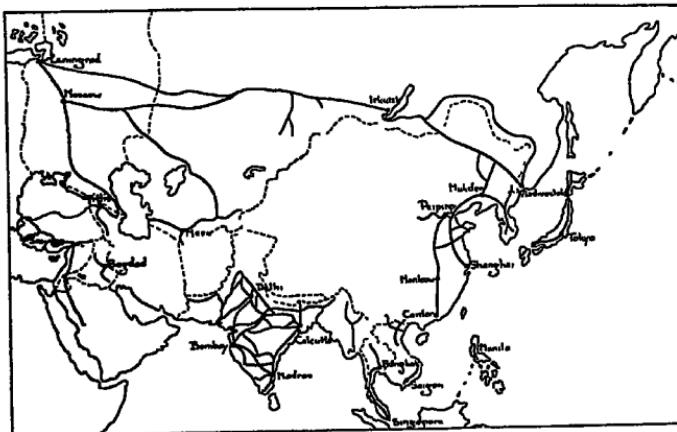


The lines indicate the World's most important modern Paths of Sea Trade

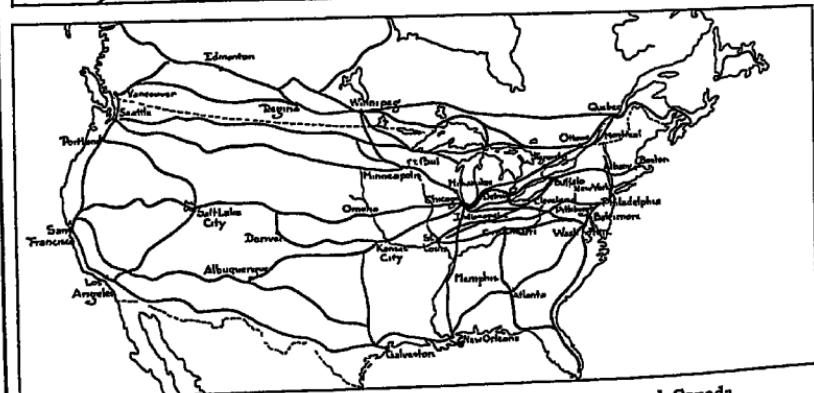
CIVILIZATION FOLLOWS TRADE ROUTES



The
Principal
Railways
of
Europe



The
Principal
Railways
of
Asia



The Principal Railway Systems of the United States and Canada

decline of feudalism, however, and the gradual growth in the independence of individuals, commerce became more general and the old market towns lost their prestige, though fairs and markets are still held in some important cities of Europe. Commerce between Europe and Asia was stimulated by the Crusades, but not until the sixteenth century did trade between nations begin to assume its present world-wide importance.

COMMERCE, CHAMBER OF. See CHAMBER OF COMMERCE

COMMERCE, CHAMBER OF, OF THE UNITED STATES See CHAMBER OF COMMERCE OF THE UNITED STATES.

COMMERCE, DEPARTMENT OF, one of the executive departments of the United States government, in charge of the Secretary of Commerce, who by virtue of his office is a member of the President's Cabinet (see CABINET). The department was organized, with that of Labor, in 1903 as the Department of Commerce and Labor, but in 1913 the two were separated (see LABOR, DEPARTMENT OF).

The Department of Commerce embraces a number of bureaus that once belonged to various other departments, such as the Patent Office, the Lighthouse Establishment, the Steamboat Inspection Service, the Coast and Geodetic Survey, the Bureau of Statistics, the Bureau of Navigation, the Census Bureau, the Bureau of Foreign Commerce, the Bureau of Standards, and the Fish Commission. It also included two new bureaus, those of Corporations and Manufactures. The duties of the former bureau are to deal with corporations, other than railroads, engaged in commerce with foreign nations and between states. The bureau of Corporations, charged with these important duties, was later transferred to, and became a part of, the Federal Trade Commission.

COMMERCIAL AGENCY, an organization which secures information regarding business houses, for the benefit of other business concerns from whom credit is solicited. The facts ascertained, from intimate investigation, relate to the amount of capital invested, other financial responsibility, promptness with which debts are paid, the moral factor, etc. With such a report before him a credit man may easily determine whether the seeker for credit is a safe risk, and to what amount. The leading commercial agency in the United States is Dun & Bradstreet. See A 1 AND AAL.

COMMERCIAL LAW, the law which regulates commercial affairs. It is derived from the maritime codes of medieval Europe, the imperial code of Rome, international law and the customs of merchants. In the United States and Canada the term includes chiefly the law dealing with contracts of every nature. The subjects embraced within it are the laws of shipping, negotiable paper, sales, common carriers, and partnerships, etc.

COMMISSION FORM OF GOVERNMENT, a system of city government, in its inception known as the *Galveston Plan*, because it was introduced into Galveston, Texas, in 1901, following a disastrous flood and resultant disorder in that city. In its simplest form the commission system of city government places the entire administration of the city's business in the hands of a few men, usually five, who are elected by the legal voters. The chairman or president of the commission is the mayor, and each commissioner has charge of some branch of the city's business, for the administration of which he is directly responsible to the people. The commission is the source of all authority in city affairs, makes all the ordinances, appoints all the officers, collects taxes and makes appropriations.

The commission system is characterized by the following features:

1. The assignment of the important divisions of the city government to individual members of the commission, each of whom is directly responsible to the people.

2 Adequate compensation to members of the commission, thus enabling them to devote their entire time to the affairs of the city.

3 Selection of all employees above day laborers on examination, oral and written, and given for the purpose of determining fitness.

4. Provision for retention in office of all employees so appointed, during good behavior.

5 Power of initiation and referendum reserved by the people. See Referendum.

6. Power of recall reserved by the people.

In some cities the terms of all commissioners expire the same year, in others, only one retires each year. This system of municipal government has been adopted by about four hundred cities in the United States. Its chief advantage is that it concentrates authority and responsibility in the hands of a few officials. See CITY MANAGER.

COMMITTEES OF CORRESPONDENCE, patriot committees organized in the American colonies before the outbreak of the

Revolution. They were in effect publicity, or propaganda, committees, being charged with the duty of collecting and publishing the grievances of the Americans and of maintaining correspondence between the different colonies. In addition, they secured authentic information regarding Parliamentary acts in England. The organization of these committees, the first of which was formed in 1772, was an important step in the process of uniting the colonies.

COMMODORE, *kahm'o dohr*, formerly the title of a naval officer of the United States, in rank between captain, below, and rear-admiral, above. The comparative rank in the army was that of brigadier-general. The grade of commodore was abolished in 1899; the men holding that rank were advanced to the next higher grade. The salary was \$5,000 per year.

COMMON CARRIER, an individual or corporation which transports goods and passengers for hire. Two rules of law govern the regulation of carriers: (1) they must carry any who apply to them, without discrimination; (2) they are responsible, in the case of transportation of freight, for the loss or injury of the goods entrusted to them, even without negligence on their part. This responsibility extends to all cases except those arising (a) through "act of God," that is, accidents in which there is no human agency; (b) through act of a public enemy, that is, a government at war, or pirates; (c) through the act or default of the shipper; (d) through acts of public authorities; (e) from the nature of the goods transported; (f) from the ordinary wear and loss, such as perishable goods. The liability of the carrier begins when the goods have been placed in the hands of its agents, and its liability ends when they have been transported to the place agreed upon. This may be, in the case of a railroad, in its freight house at the point of destination; in the case of express companies, at the business or residence address of the consignee.

In relation to *passengers*, the carrier is bound to carry those whom it accepts, without negligence. In the case of accidents it rests with the carrier to show that the accident arose from no fault of its own or on the part of its servants or agents. Hence, injured passengers or, in case of death, their nearest relatives, have a claim for compensation, provided they did not contribute to the

injury by negligence. The same rules apply in general to carriers by water, together with certain special regulations applicable to these carriers alone. In case of danger from tempest or from enemies, ship passengers may be called upon by the captain or commander to lend their assistance for the general safety.

COMMON COUNCIL, the legislative body of a city or incorporated town. In the former it is usually given the name *board of aldermen* (see *ALDERMAN*). The common council sometimes consists of two houses or chambers, but usually is a single body. In American cities the council is elected by the people; the members usually serve two years.

COMMON LAW, the unwritten law, the law that receives its binding force from immemorial usage and universal reception. It consists of that body of rules, principles and customs which has been received from former times, and by which courts have been guided in their judicial decisions. It is contrasted with *statute law*, which is contained in acts of a legislature. Wherever statute law runs counter to common law the latter is entirely overruled. In the United States there is no national common law, but the state courts have relied on the English common law and have developed a fairly uniform system of common law throughout the country.

Related Articles. Consult the following titles for additional information.

Civil Law
Equity
Law
Statute

COMMONS, HOUSE OF. See *GREAT BRITAIN*, subhead *Government*.



COMMON SCHOOLS. This term as generally understood, refers to schools that are supported by the state and that give instruction in the elementary branches. In every advanced country the common school is recognized as the foundation stone of the nation's progress. A universal common-school system is the only system which insures an education for the masses, and upon the general intelligence of the citizen body depend the stability and prosperity of the nation.

Common schools date from the Middle Ages, particularly from the Reformation

period. Luther not only favored public schools, but his doctrine made them a necessity to his followers. He held that individuals were responsible for their beliefs, and that these beliefs were to be based on the personal study of the Bible; hence, it was necessary for every one to learn to read. Previous to Luther's time, Latin had been generally taught in the schools, and little or no attention had been given to the teaching of the mother tongue. Now children were taught to read and write their own language. The invention of printing, which occurred a few years before, made it possible to supply the people with books and thus aided in the work of general education throughout Europe. The status of the common schools in each of the European countries is treated in the respective articles, under the subhead EDUCATION.

In America. The American colonists gave early attention to education. Schools were established in Boston as early as 1635, and in 1637 the General Court of Massachusetts decreed that every town having fifty families should establish a common school for the instruction of the children who desired to attend. The expenses of such schools were to be met either by the town as a whole or by the families whose children attended. The same act provided for the establishment of a grammar school, which should fit boys for college, in every town of 100 or more families. Connecticut and New Haven followed within the next few years, but no system of public schools was established in Rhode Island until 1790. Among the Middle Colonies, the Dutch in New York organized a system of public schools before that colony was taken by the English. After this event little attention was paid to public education until after the Revolution. The Swedes in New Jersey and Delaware also founded schools, and the charter granted William Penn provided for a system of public education. This, however, was not carried out until long after Penn's death. In 1698 the Society of Friends established a school in Philadelphia, which is now known as the Penn Charter School, but it was not until after the middle of the eighteenth century that measures were taken for systematic instruction of the children by the colony.

The Southern colonies, having an entirely different social system, did not establish public schools. The large plantations and the

consequently sparse settlement of the country made such institutions practically impossible during the early history of these colonies. The children of planters were taught in their homes, either by tutors or governesses, and the boys of some wealthy families were sent to England to complete their education. The growth of slavery, following the Revolutionary War, perpetuated the early institutions of the South, so that few free public schools were established in the slave-holding states until their reorganization after the Civil War.

The resources of the country were so thoroughly taxed during the Revolutionary War that but little attention could be given to education; consequently there was no progress in the common schools during that period. After the close of the war the New England states gave attention to their schools. With the exception of Massachusetts, in New England and all other parts of the country, free public schools were considered charitable institutions, maintained for the education of the children of those families who were too poor to pay for the instruction; and wherever possible rate bills or local taxes were assessed on all families sending children to these schools. This plan made the schools odious to those for whom they were established, and contemptible to others; consequently it did not succeed.

The establishment of public schools at state expense was undoubtedly delayed because of the lack of funds, and the condition of the country was such during the years immediately following the Revolution that increased taxation for any purpose was impossible. In 1805 the Public School Society of New York was formed. The purpose was to maintain schools for the instruction of those children whose parents were unable to provide it themselves, but the plan was soon broadened to include all children who applied, and from this the ascent to the support of common schools by the state was comparatively easy. Soon after this New York provided for county supervision of schools. Pennsylvania was somewhat behind New York, but the New England states were in the van of the movement. As the states west of the Alleghanies were organized, school systems, modeled after the plan of the states from which the settlers had come, were instituted.

The common schools of the United States

are now, with few exceptions, thoroughly organized and economically managed. All cities, large towns and villages have graded schools, and in many states graded courses of study are provided for the rural schools. Immense sums have been spent upon buildings, grounds and appliances in cities and towns and in the wealthier rural communities. While each state is a law unto itself, as far as its determination of courses of study, qualifications of teachers, methods of organization and management are concerned, yet in their main features all of the state systems are essentially the same. Though there is not, technically or legally, a national system of education, the uniformity of these state systems practically makes the whole system national.

Consult, in each of the state articles, the subhead *Education*. See, also *High School*, *subhead Junior High School*.

COMMONWEALTH OF ENGLAND, the name usually given to the form of government which was in force from the death of Charles I, 1649, to the restoration of Charles II, in 1660. That is, it was the period during which England was governed without a king. The interval in which Cromwell governed as Lord Protector, from 1653 to his death, is known as the Protectorate. See **CROMWELL, OLIVER**.

COMMUNE, *kom mune'*, the smallest government district in France and in some other countries, as Belgium. A commune sometimes embraces a number of villages, while some large cities are divided into a number of communes. In either case each commune is governed by an officer called a mayor, who is assisted by a deliberative assembly called the *conseil municipal*. In America the township is the local unit most like the commune.

COMMUNE OF PARIS, a name applied in French history to two bodies which at different times ruled Paris. The first was a revolutionary committee which in 1792 took the place of the municipal government of Paris and soon usurped the supreme authority in the country. Among its chiefs were some of the most violent of the demagogues, such as Hébert, Danton and Robespierre (see **FRENCH REVOLUTION**).

The name was also adopted by the ultra-radical party brought in to prominence by the events of the Franco-German War, and, more immediately, by the siege of Paris (October, 1870, to January, 1871). This party

ruled Paris for a brief period after the evacuation of the German troops and had to be suppressed by troops collected by the National Assembly of France. During this régime much valuable property was destroyed.

COMMUNISM, originally an economic system altruistic in conception, in which no man in a society owned property in his own right; he gave his labor for the good of all, and the needs of himself and his fellows were supplied from the common fund. Several such experiments have been tried within a century, but all have been abandoned.

The basis of Communism has undergone a change, revolutionary but understandable. Radical minds, viewing with intolerance an ordered state of society under capitalism, seized upon its principles and carried them to the extreme that resulted in the flowering of the government of Soviet Russia, a vast Communist state, the only example of its kind.

In Russia Communism is the "rule of the proletariat" (the common people, the class without property), where the structure of capitalism, representing all that had stood for repression under the czars, no longer exists, but is made to serve the working classes; class distinctions are levelled.

The workers control the state, through committees called soviets, but dictators assume control of public thought and action, and the workers, tamely submissive, are themselves under stern repression.

COMMUNITY CENTER. The spirit of friendly cooperation in local communities is one of the most encouraging aspects of modern life. It is being particularly manifested in the establishment of neighborhood centers, where all the people of the community meet on a common footing for recreation, fellowship or educational uplift. Most important of the agencies used for neighborhood cooperation is the school. Prof. Edward J. Ward, a specialist in community organization, has been chiefly instrumental in furthering the idea of making the school a community center.

The plan recommended by Professor Ward is about as follows: There should first of all be a preliminary organization of the adult citizens of a neighborhood. They may apply to the proper authorities for the use of the school building in the organization of a neighborhood forum, conducted on the same plan as a debating or literary society.

The neighborhood forum gives opportunity for the presentation and discussion of questions pertaining to the community, and provides a basis for a broader organization of the community center. The ideal sought is the establishment of a center where neighborhood athletic, dramatic, social and educational clubs may meet, where young people may gather for recreation, where questions of civic welfare may be discussed, and people of all ages may meet for holiday celebrations and reunions.

To further the efforts of community workers the Hollis-Johnson Community Forum Bill was drafted and introduced into Congress. It provides for a completed community center along the following lines:

That whenever a public school building shall have been established as a community forum under the provisions of this act, and upon request to the board of education so to do by a majority of the adult persons present and qualified to vote at any regular meeting, the said board shall designate such building as a community center for the organized training and recreation of the young people of the community, including such activities as may be requested by the said adult organization and approved by the said board, and shall make all necessary and appropriate arrangements for the convenient and proper use of the building for community center meetings and activities, at such times as the said adult organization may request and the said board approve.

It shall be the duty of the board of education to provide out of appropriations of public funds authorized for the public schools, light, heat, janitor service and such other expenses as may be necessary to enable the comfortable and convenient use of public school buildings as community forums and community centers under the provisions of this act.

COMO, a lake in the north of Italy, at the foot of the Alps, fed and drained by the river Adda. It is celebrated for the beautiful scenery of its shores, which are covered with handsome villas, gardens and vineyards, behind which mountains rise to the height of 7,000 feet. Trout and other fish abound in the lake. The chief towns on its shores are Como, Bellano, Bellaggio and Menaggio.

COMO, *ko'mo*, **ITALY**, capital of the province of Como, in the northern part of the country, in a delightful valley at the southwest extremity of Lake Como. The city is twenty-four miles northwest of Milan. It has a splendid marble cathedral, dating from the fourteenth century. The manufactures

include woolens, silks and cotton. Here were born Pliny, the Elder and the Younger, and Volta, the physicist. Population, 1931, 54,138.

COMORO, *kahm'o ro*, **ISLANDS**, since 1914 a colony of France, in the Indian Ocean, attached to the government of Madagascar. There are four islands, with an area of 800 square miles and a population of 98,000. The entire group was ceded to France in 1886, but the largest island, Mayotta, has been a French possession since 1842.

COMPANY, in commerce. See **PARTNERSHIP**; **CORPORATION**; **TRADING COMPANIES**.

COMPASS, *kum'pas*, an instrument for determining direction with reference to the north and south points. The earth is a gigantic magnet, with its poles near the geographical north and south poles; and the attraction of these magnetic poles is sufficient to keep the needle pointing north and south (See **MAGNETISM**.) Compasses are usually classified as the surveyor's compass, the mariner's compass and the variation compass.

The *surveyor's compass* consists of a magnetic needle enclosed in a circular box and



THE MARINER'S COMPASS

moving over a disk graduated to degrees, minutes and seconds. The frame has two vertical sights at opposite ends of a diameter, so as to secure accurate pointing. The direction of the line in which the compass points is determined by reading the number of degrees between the north pole of the needle and the line of sight. A level and a tripod are necessary parts of a surveyor's compass.

The *mariner's compass* is used on board ship; it consists of several magnetic needles arranged parallel to one another and attached to a card, which is mounted at its center upon the end of an upright steel pivot. The whole arrangement is enclosed in a circular brass box, which is hung within a wooden box and is so fixed that the compass card remains horizontal, whatever position the ship may take. The card is divided into thirty-two equal parts by lines drawn from the center to the circumference. The intervals between these points are divided into halves and quarters, so that the entire circumference is divided into 360 equal parts or degrees. Four principal points, north, south, east and west, are designated as *cardinal points*. The names of the others are compounds of these. The direction of the ship is determined by noting the number of degrees between the north pole of the needle and the course as indicated by a line from the center of the wheel to the point of the bow.

Navigators' tables, indicating the variation of the compass in various parts of the ocean, are in general use, and by these the navigator is able to correct his compass without difficulty. See *Gyro-Compass*.

Boxing the Compass. To *box the compass* signifies ability to name from memory, in proper order, all the points, half points, quarter and eighth points of the compass, starting from any point. Every helmsman must be proficient in this.

COMPASSES, or DIVIDERS, a mathematical instrument, used for describing circles and measuring lines. The compasses consist simply of two pointed legs, movable on a joint or pivot, and they are used for measuring and transferring distances. For describing circles the lower end of one of the legs is removed and its place is supplied by a holder for a pencil or pen. *Hair compasses* are compasses having a spring, tending to keep the legs apart, and a finely threaded screw, by which the spring can be compressed or relaxed with the utmost nicety and the distance of the legs regulated to a hair's breadth.

COMPASS PLANT, an annual plant belonging to the composite family, common in the prairies of the Western states. The large, ragged leaves grow upright on rather long stems. As the structure of these leaves is the same on both sides, both surfaces are equally sensitive to the light, and they are

able to secure an equal amount of light for both sides of the leaves only by having their edges vertical and their tips to the north and the south. Hence the name of the plant. *Resin weed* is another name for this plant, derived from the fact that the stems contain resinous matter.

COMPOSITE, kom pos'it, FAMILY, or COMPOSITAE, kom por's tee, the largest family of plants, containing over 12,000 known species, which are grouped in 1,000 genera. They consist of herbs or shrubs and are distributed all over the world. The characteristic of the family is the head of small flowers, which in itself is sometimes mistaken for one large flower. The resemblance is made stronger by the fact that in many species the flowers in the outer margin of the head are different in form from the others,



COMPOSITAE

a. Flower head, b. Single ray flower, c. Single disc flower, d. Small head with tubular flowers only.

and their tubular corollas are modified so as to resemble the petals of a simpler flower. The small flowers in the middle of the head, which resemble the pistils and stamens of a typical flower, are intermingled with bristles and scales of various forms, which, with the appendages to the seeds, are important factors in classifying the plants of this difficult group. While a typical flower is on the plan of five and is perfect, yet the outer flowers are irregular and not infrequently imperfect and sterile.

When it is remembered that nearly one-tenth of the known species of flowering plants belong to this one family, its importance may be understood. A great many of the plants are cultivated for ornament, and some few serve as food plants. Others have considerable medicinal value. A great many different plants of this order are described under appropriate titles in this work.

Related Articles. Among the plants of this family reference to the following will prove helpful.

Arnica	Daisy
Aster	Goldenrod
Chrysanthemum	Lettuce
Dahlia	Thistle

COMPOSITION OF FORCES, in physics, is the union of several forces that are acting in different directions, into an equivalent force acting in another direction.

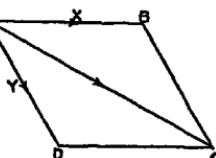
Thus, two forces, as X and

Y , acting in the directions of the adjacent sides of the figure $ABCD$, unite to form a force acting in the direction of the diagonal AC . If the lengths of the adjacent sides of the parallelogram represent the relative magnitudes of the forces, the diagonal will represent the magnitude of the compounding force. The length of the diagonal, or equivalent force is called the *resultant*.

COMPRESSED AIR, air confined under pressure greater than the pressure of the atmosphere, which is about 14.7 pounds to the square inch at sea level. The simplest example of air compressed and made to perform work is found in the boy's popgun, whose barrel is made from an elder stalk from which the central pith has been extracted. Applying the same principle to mechanics in a great variety of ways, men have put air to work to operate large hammers, rock drills and other pneumatic tools, air hoists, canal locks and some classes of elevators; to lift water, acids, and other liquids; as a treatment for tuberculosis, by expanding the lungs; to paint broad surfaces, such as bridges, freight cars, warehouses and buildings, to force plastic material through dies, holes and pipes; to operate mine cars and brakes on railroad cars; to inflate pneumatic tires for automobiles, bicycles and carriages; to drive the sand in a sand blast; to clean carpets, rugs, cars, and for hundreds of other purposes.

As a means of transmitting power compressed or condensed air received the attention of scientists as early as A. D. 1700. See AIR BRAKE; PNEUMATIC TOOLS.

COMPROMISE, *kom'pro mize*, OF 1850, a set of compromise measures passed in August, 1850, in the Congress of the United States, their purpose being to allay the strife



over slavery by granting concessions to both parties. Under the compromise, Texas was allowed \$10,000,000 for renouncing its claims to New Mexico; California was admitted to the Union as a free state; New Mexico and Utah were organized as territories, with the right to adopt or reject slavery; the slave trade was abolished in the District of Columbia; fugitive negroes were denied a trial by jury, but were to be returned to their owners upon certain affidavits. This latter provision was known as the Fugitive Slave Law (which see). The compromise was passed largely through the efforts of Daniel Webster, Henry Clay and John C. Calhoun, each of whom made his last great speech in its behalf.

COMPTROLLER, *kom trohl'er*, a public officer, usually appointed and not elected, is a person whose duty is to audit and certify public accounts. His tasks are similar to those of an auditor, but he has more extended powers, including executive functions.

In the United States government the *Comptroller of the Treasury* must sign all warrants for the payment of money out of the Treasury, and he therefore controls absolutely all the vast expenditures of the Federal government. Any proposed payment he deems not in strict conformity with Congressional appropriations he may refuse to sanction, and there is no appeal from his decision except to Congress.

COMPULSORY EDUCATION. The right of the state to educate the child for citizenship has been recognized from ancient times. The best example of compulsory education among the early nations is the system adopted by the Spartans. Their education of boys was primarily military and had for its purpose the making of soldiers. But from compulsory training in military affairs to compulsory training in other lines was an easy step, and Athens extended its training to include other subjects than those dealing with war.

As the term is now applied, compulsory education means compelling the attendance of children of school age, usually between six and fourteen or six and sixteen years of age, upon the elementary schools, public or private, for a specified number of months each year. Laws compelling such attendance are in force in all progressive countries throughout the world. In the United States compulsory attendance measures are almost

as old as the public school system, but state laws for the purpose did not receive general attention until the latter half of the nineteenth century. Most of the states now have stringent laws requiring parents to send children to school and providing for fines, and in some cases for imprisonment, as penalties for failure to comply with the law. Children who have acquired a knowledge of the branches taught in the common schools, defectives and those in ill health are exempt. Compulsory education laws are necessary because of the increasing tendency to employ children in mines, factories and large stores. In the large cities these laws are quite rigidly enforced, but in the rural districts and in most of the smaller towns the authorities are sometimes indifferent.

The laws are enforced by truant officers, who are appointed by the local board of education. These officers have authority to arrest any child to whom the law applies and commit him to school in his district. If, after warning, the parents do not keep their children in school, the truant officer has authority to have such parents arrested and brought before the local court for trial. In some large European cities truant schools, in which habitually truant pupils can be confined, are in operation.

COMTE, *koNt*, ISIDORE AUGUSTE MARIE FRANÇOIS XAVIER (1798-1857), the founder of the positive system of philosophy, or Positivism, was born at Montpellier, France. When sixteen, he entered the polytechnical school at Paris, from which he was expelled two years later. After this he became interested in the socialistic teachings of Saint Simon, from which the doctrines of his own system originated. In 1826 he undertook a series of lectures, but was unable to complete the work, because of temporary mental derangement. After recovery he began systematic work upon the exposition of his doctrines, which he gave in his *Course of Positive Philosophy*, a work consisting of six volumes and requiring twelve years for its preparation. He was for a few years professor of mathematics in the polytechnic school, but was dismissed, and during the remainder of his life he was supported chiefly by his friends.

The underlying principle of Comte's philosophy is known as "the law of three stages." According to this law, intelligence, whether of the individual or of society, has passed

through three stages or periods of development: the *theological* stage, in which supernatural beings are believed to produce all phenomena; the *metaphysical* stage, in which abstractions, such as mental or physical force, are regarded as the causes of all activity, and finally, the *positive* stage, in which the search for ultimate causes is given up, and effort is confined to discovering the actual relations or associations that observation shows to exist among phenomena.

CONCEPCION, *kon se pse own'*, CHILE, a seaport of South America, capital of a province of the same name, situated six miles from the mouth of the Biobio River and 270 miles southwest of Santiago. The chief buildings are a cathedral, an agricultural school, a normal school and a town hall. Its port is Talcahuano, about eight miles distant. Concepcion was founded in 1550 by Valdivia and has been several times nearly destroyed by earthquakes. Population, 1930, 77,600.

CONCEPT, *kon'sept*, in psychology, the name generally given to the idea of a class, or general, notion. The first step in the formation of concepts is the acquisition of individual ideas through the senses. As these ideas are acquired, they are compared and their points of similarity and dissimilarity are noted. The qualities given to the ideas are separated from the others and grouped together, forming an idea which applies to all the objects of the class. This idea is a concept. One's idea of *orange*, *apple*, *horse*, applies to all oranges, all apples or all horses, as far as his knowledge of each of these classes of objects extends, and it is not an idea of any particular orange, apple or horse. A concept is an abstract idea consisting of a group of qualities common to all objects to which it can be applied. In this respect it is different from an image. An image is a mental picture of an individual object, which includes all of that object's peculiarities. One's concept of man, if accurate, will apply to all men; but the mental image of one's father includes all of those peculiarities pertaining to the father's personal appearance, such as height, weight, facial expression, color of hair and eyes.

The formation of concepts is the first step in thinking. It begins early in life and is at first spontaneous. The earliest concepts are very crude, and they need to be perfected through voluntary observation. Parents and teachers can materially assist children in the

formation of concepts, by observing the following principles:

(1) There is a vital connection between sensation, perception and the formation of concepts. The child's success in forming class ideas depends upon the care with which he has acquired individual ideas.

(2) The child should be trained to form clear and correct concepts early in life, since the time soon comes when ideas of individual objects obtained through perception will not be sufficient for his needs, and he will have to draw upon the idea earlier acquired as a basis of comparison, in order that he may correctly classify his knowledge. If his early concepts are correct, his classification will be much more accurate than if these concepts are false.

(3) Concrete illustrations are necessary to enable children to form correct concepts, and these should be chosen with care. They should bring before the child the idea which he should obtain and should be clear and pointed.

(4) One should always be able to change his concepts into images of the individuals for which the concept stands. In other words, one should be able to apply his general notions to individual cases. If he is not able to do this, his concepts are not clear. Much of the difficulty which pupils experience in arithmetic, grammar and other branches arises from their inability to image their concepts, or, in other words, to apply the principles and rules which they have learned to the solution of problems presented to them. This difficulty can usually be avoided if concepts are formed through observation.

Related Articles. Consult the following titles for additional information:

Abstraction	Methods of Teaching
Inductive Method	Perception
Judgment	Thought

CONCERTINA, *kon sur tē'nah*, a musical instrument, an improved form of the accordion (which see). It is composed of a bellows, with two faces or ends, generally polygonal in shape, on which are placed the various stops, or studs. By the action of these, when they are manipulated by the performer's fingers, air is admitted to metallic reeds, which produce the sounds.

CONCH, *konk*, a tropical mollusk having a heavy spiral shell. In the East Indies the shell of one species is perforated at the tip, fitted with a mouth-piece and used as a musical instrument. In the United States and Europe conch shells are ground for use in porcelain manufacture. Cameos are sometimes cut from



CONCH

these shells, and buttons also are made from them. The egg cases of the conch are known as "sea necklaces," as they resemble leathery disks strung on a cord.

CONCLAVE, the assembly of the Roman Catholic cardinals for the election of a Pope. A two-thirds vote is necessary for an election. The cardinals meet in a part of the Vatican which has been divided into several small apartments. After the first day they are locked in and are allowed no communication with the outer world till after the election takes place. Even the food, passed through a window, is thoroughly examined that no letters or notes may reach the members of the Sacred College. See **SACRED COLLEGE; POPE**.

CONCORD, BATTLE OF. See **LEXINGTON, BATTLE OF**.

CONCORD, MASS., a town of Middlesex County, occupying an important place in American historical and literary annals. Here, at Concord Bridge, April 19, 1775, the first shots of the American Revolution were fired, and a monument on the bank of the river marks where two English soldiers fell. It is also famous as the home of Ralph Waldo Emerson, Hawthorne, Thoreau and Louisa M. Alcott; Orchard House, the home of the authoress, is an interesting landmark. Another point of interest is beautiful Sleepy Hollow Cemetery, where Thoreau, Emerson and Hawthorne are buried. Concord is twenty miles northwest of Boston, on the Concord and Sudbury rivers. Population, 1930, 7,477.

CONCORD, N H., the capital of the state, its third city in size, and the county seat of Merrimac County, seventy-five miles northwest of Boston, on the Merrimac River and on the Boston & Maine Railroad. The noteworthy buildings include the statehouse, the Federal building, the courthouse, the state insane asylum and the state library. Saint Paul's School for boys and Saint Mary's School for girls are located here. The quarrying of granite in the vicinity is the leading industry. Concord was founded in 1725 as Pennacook, and it was incorporated as Rumford eight years later, but was renamed Concord in 1765 and incorporated as a city in 1853. Mary Baker Eddy, founder of Christian Science, lived here. Population, 1920, 22,167, in 1930, 25,228.

CONCORDANCE, an index in which all the important words of any work are ar-

ranged alphabetically, with references to show where each word occurs. This sort of concordance is called a *verbal* concordance while a similar work in which subjects are indexed is known as a *real* concordance. By far the greatest number of concordances treat of the Bible. The best concordances of the English Bible are Cruden's, Robert Young's and James Strong's. Concordances have been made for Shakespeare, Tennyson, Milton, Pope, Dickens and others.

CONCORDAT, *kon kaw'dat*, a term applied to a formal agreement entered into by the Pope and a secular government pertaining to Roman Catholic affairs within the country involved. Sometimes it takes the form of a Papal bull, and sometimes that of a formal treaty. During the period of Papal supremacy in temporal affairs concordats were of much greater importance than now.

CONCRETE, *kon krest'*, a composition which may be described as artificial stone, used in rapidly increasing quantities for a wide range of building purposes. Its most common use for years was for road building, for it makes a hard, smooth and durable highway. When covered with a coating of asphalt a road is made as smooth as a floor. Within recent years the uses of concrete have been so extended that the present has been very correctly termed the "Concrete Age." Today great business blocks are constructed of concrete, reinforced by steel frames; mammoth factories, fine residences, beautiful bridges and handsome viaducts are built with it. An effort to popularize large freight vessels built of concrete did not succeed. The few boats built were not serviceable.

Concrete is made by mixing cement, sand and gravel or crushed stone in the proportions of one part, two parts and four parts, respectively; sufficient water is used to wet each particle of material used. Such a mixture is known as *reinforced concrete*. Another combination frequently employed, though not considered as desirable, is one part cement, three parts sand and six parts gravel or crushed stone, with the necessary water; this combination meets all requirements for most uses.

A plastic mass such as results from the mixing of these ingredients may be pressed into any desired form and admits of architectural designs which are particularly pleasing. The concrete, for all building purposes, is

poured into molds and firmly pressed; when it hardens the molds are removed. Concrete for small structures is often mixed by hand by the use of shovels, but when large quantities are needed mixing machines, run by steam or electricity, are employed.

For about three cubic yards of concrete there are required one cubic yard of sand, two cubic yards of gravel or crushed stone and 1,000 pounds of cement.

CONDENSATION, in natural science, the passing of a vapor or a gas into the form of a liquid. The formation of raindrops is an example of condensation, the necessary conditions being the presence of vapor in the air and a fall of temperature. When the temperature reaches a certain point the vapor condenses into the water and rain falls. Other examples of condensation are the formation of dew (which see) and the "sweating" of pitchers of ice water. See HEAT; RAIN.

CONDENSED MILK. See MILK, CONDENSED.

CONDOR, a huge bird of the South American Andes, belonging to the vulture family and noted for its powers of flight, strength and keenness of sight. It attains a length



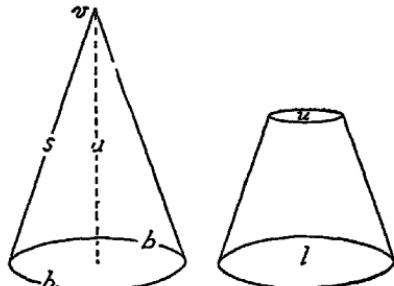
CONDOR

of fifty-five inches, and its wing expanse is from eight and one-half to ten feet or more. The condor is for the most part black, with white wing markings. There is a ruff of

soft white feathers around the lower part of the neck, the skin above being bare and folded. Condors live upon dead animals and decaying flesh, and like others of their group they are greedy eaters. Often they gorge themselves until too heavy to fly, and if they are attacked they resort to the disgusting practice of disgorging what they have eaten. Their haunts are two or three miles above sea level, the eggs being deposited on bare rock. They generally breed in small flocks. In Southern California is found a closely related species called California vulture.

CONDUCTOR, ELECTRICAL. See ELECTRICITY, subhead *How Electricity Travels*

CONE, a solid body whose base is a circle and whose sides taper uniformly to a point.



CONE AND FRUSTUM

a. Altitude; b. Perimeter of base, a. Slant height, v. Vertex, l. Lower base, u. Upper base

This point, the highest position, is called the *vertex*; the circular bottom is the *base*; the curving and diminishing exterior is the *convex surface*.

The area of the convex surface is equal to the circumference of the base multiplied by half its slant height. The volume of the cone is equal to the area of the base multiplied by one-third its altitude (the perpendicular distance from vertex to base). To find area of base, see the article CIRCLE.

CONE-BEARING TREES. See CONFERAE, or PINE FAMILY.

CONEY, ko'me, ISLAND, one of the most famous pleasure resorts in the world, situated off the south shore of Long Island, nine miles southeast of the Battery, New York City. It is in Kings County, and was annexed to Brooklyn in 1894. Though the name refers to the entire island, the thousands of pleasure seekers who throng there every summer go usually to the section offi-

cially called West Brighton. To the average visitor, this gay and crowded district is "Coney." In other parts of the island there are beaches, hotels and residences. Coney Island is of historic interest as the place of Henry Hudson's landing in 1609.

CONFEDERACY, UNITED DAUGHTERS OF THE, a patriotic society of women, banded together to preserve the memory of those who suffered for the South during the Civil War. The society was organized in Nashville, Tenn., in 1894. It is composed of the direct female relatives and lineal female descendants of those who helped the Confederacy by fighting or otherwise. Local chapters are under the direction of state divisions, and these are controlled by a general organization. In 1918 the society had a membership of over 80,000 and 1,300 local chapters.



CONFEDERATE STATES OF AMERICA, a league of states formed in 1861 by eleven American commonwealths which seceded from the Union. The disunion was brought about by the existence of slavery, and was followed at once by four years of the greatest civil war the world has ever known.

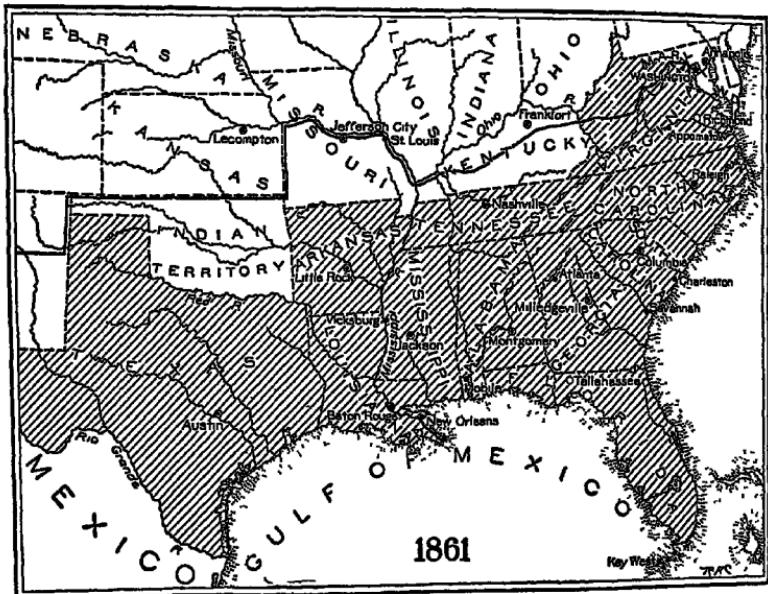
The first move in the formation of the Confederate government was made by South Carolina. A convention in that state passed an ordinance of secession on Dec. 20, 1860, and expressed the hope that the other states contemplating secession would join in a federation. Three weeks later the convention of Mississippi indorsed this proposal, as did also the convention of Florida, January 10, 1861. On January 11 the convention of Alabama recommended that the seceding states send delegates to a congress called to meet at Montgomery, Ala., February 4, 1861, to form a federation. South Carolina, Mississippi, Florida, Alabama, Georgia and Louisiana were represented in this convention and organized as a Provisional Congress of the Confederacy.

On February 8 a temporary Constitution was adopted, to be in force for one year from the inauguration of the President, or until a permanent Constitution should be adopted. Jefferson Davis of Mississippi was

chosen temporary President and Alexander H. Stephens of Georgia, temporary Vice-President. The Congress enacted that all laws of the United States in force in the Confederate States on Nov. 1, 1860, and not inconsistent with the Constitution of the Confederacy, be continued in force until repealed or altered by the Confederate Congress. The more important Congressional committees—on war, finance and foreign relations—were appointed at once. During the year 1861 Texas, Arkansas, Virginia, North Carolina and Tennessee passed ordinances of secession

Davis had chosen his Cabinet, which represented every state in the Confederacy, among the members being men of exceptional ability, as Robert Toombs and Judah P. Benjamin.

The first important act of the Congress was to make provision for a permanent army. It then devoted itself to seeking foreign recognition and assistance and to building up a financial system for the support of the government. From the first, however, it also sought peace upon the basis of the separation of the North and South,



THE CONFEDERATE STATES OF AMERICA

and joined the Confederacy. On March 11 a permanent Constitution was adopted by the Congress and submitted to the various states for ratification. This Constitution was in general similar to that of the United States, but different from it in some important respects: The term of the President was fixed at six years, and he was ineligible for re-election; slavery was sanctioned, and slaveholders were given the privilege of taking their slaves into any state or territory; Cabinet officers were given seats in Congress, according to the system prevailing in Great Britain; the states expressly retained their sovereignty. Meantime, the executive departments had been organized, and President

but all efforts in this direction were vain. On Nov. 6, 1861, Davis was chosen permanent President and Stephens permanent Vice-President of the Confederacy, by a unanimous vote. During the next few months the extraordinary demands made upon the government by the war and the necessity of using all the capable soldiers in military capacities led to a decline in the strength of congress as a body, and the consequent centralization of power in the hands of the executive, and especially of President Davis. His services, therefore, as head of both the civil and military administrations of the Confederacy, involved tremendous responsibilities, and he was not free from criticism, es-

pecially directed at the gradually growing supremacy of the military over the civil law, and at the extraordinary orders and decrees which he found necessary in order to secure support for the government. The chief difficulties of the Confederacy were due to the lack of funds; for the import duties, which under ordinary conditions would have constituted the chief source of revenue, were almost entirely excluded by the blockade, and there was also a strong sentiment against the imposition of internal taxes. The government was finally compelled to issue vast sums in paper money, or government notes, and to exchange government bonds for provisions and ammunition. The confusion was increased by the issuance by states, cities, banks, corporations and even private citizens, of notes for circulation as money. The decline in value of this money naturally led to fabulous increases in the price of all commodities. During the war the price of flour was at times \$400, Confederate money, per barrel, shoes sold at \$150 a pair; the use of tea and coffee was practically abandoned; ice was used only by the most wealthy citizens, and such common necessities as coal, wood, medicines and salt were classed as luxuries.

The permanent Senate and House held two sessions, the final adjournment being taken March 18, 1865, about a month before the close of the conflict. The armies of the Confederacy surrendered to the Federal armies, and the struggling government ceased to exist.

The story of the war, told in the article *Civil War in America*, gives further details regarding the Confederate States. See, also, *Slavery*.

CONFEDERATE VETERANS, UNITED, a patriotic society composed of veterans of the Confederate army, organized at New Orleans, La., in 1889, for the purpose of strengthening the friendships formed during the war, preserving the memory of dead comrades and aiding veterans and their widows and orphans. The organization is supported by more than 1,800 local camps, divided into three departments, and it includes about 50,000 members. It holds annual reunions.

CONFEDERATE VETERANS, UNITED SONS OF, a patriotic society composed of the male descendants of Confederate veterans, organized at Richmond, Va., in 1896, for the purpose of gathering and preserving historic

relics and data, from which to write a history of the Civil War from the Southern standpoint. The organization is divided into three departments and many local camps. In 1902 it purchased Beauvoir, the home of Jefferson Davis, on the Gulf shore in Mississippi, to be used thereafter as a home for Confederate veterans.

CONFEDERATION, ARTICLES OF, the written instrument of government adopted by the thirteen states in America in 1781. The Articles were the work of a committee appointed upon the same day as was the committee to draw up the Declaration of Independence. The Articles were reported to Congress July 12, 1776, but a prolonged debate ensued and they were not adopted until November, 1777. They were then sent to the state legislatures, whose unanimous consent was necessary to their final adoption. By May, 1779, all the states except Maryland had ratified the Articles, but Maryland demanded that states should first cede their territorial claims in the Northwest Territory to the Federal government. This being done, Maryland signed the articles, March 1, 1781.

The articles provided for a "firm league of friendship," under the title *United States of America*, and declared that each state should retain its sovereignty and all the rights and powers which were not expressly delegated to the United States. The government was to be in the hands of Congress, composed of not less than two nor more than seven delegates from a state, each state having, however, but one vote. Though Congress could decide disputes between the states, it had no power to regulate commerce or to raise revenue; it could declare war, but could not raise troops; it could make appropriations, but could not collect taxes; it could pass laws, but could not compel their observance; it could borrow money, but could not guarantee its repayment. Under this weak and decentralized government, conditions in the colonies became grave, and the conviction became widespread that a new government must be formed, possessing more powers than did the one created by the Articles. The result was the Constitutional Convention and the Federal Constitution adopted in 1787. See *CONSTITUTION OF THE UNITED STATES*.

CONFEDERATION OF THE RHINE, a league of German *Princes* formed in 1806

CONGRESSIONAL, *kon gresh'uh näl*, LIBRARY. See LIBRARY OF CONGRESS.

CONGRESSIONAL RECORD, the daily printed report of the proceedings of the Congress of the United States. From 1789 to 1824 this was known as the *Annals of Congress*; from 1825 to 1837, as the *Register of Debates*; from 1837 to 1874 as the *Congressional Globe*. It does not contain an accurate record of the actual proceedings of Congress, since members are often allowed the right to insert speeches which they have never delivered, or to revise remarks which they have made before the House.

Any person may subscribe for the *Record*, at \$1.50 per month, \$4 for the short session of Congress or \$8 for the long session. It is furnished free to public libraries.

CONGRESSMAN - AT - LARGE. The Congress of the United States determines the number of members the House of Representatives shall contain for each ten-year period following the taking of the census. Each state is divided into as many districts for election purposes as the number of Representatives allotted to it, and each district chooses one member. If any state is entitled to an additional Representative under a new apportionment it need not defer his election until a new district is created, but may elect him from the state at large. All the voters of the state participate in the election.

CONGRESS OF MOTHERS, NATIONAL. In February, 1897, a group of parents, educators, clergymen and statesmen met in Washington, D. C., to formulate plans for improving the condition and prospects of the children of the country. The leading figures of the gathering were Mrs. Theodore W. Birney and Mrs. Phoebe A. Hearst. A constitution was adopted, in which the aims of the Congress were stated to be as follows:

The objects of this Congress shall be to raise the standards of home life, to give young people opportunities to learn how to care for children, so that when they assume the duties of parenthood they may have some conception of the methods which will best develop the physical, intellectual and spiritual nature of the child, to bring into closer relations the home and the school, that parents and teachers may cooperate intelligently in the education of the child, to surround the childhood of the whole world with that wise, loving care in the impressionable years of life that will develop good citizens; to use systematic and earnest effort to this end through the formation of Parent-Teacher As-

sociations in every public school and elsewhere, through the establishment of kindergartens, and through distribution of literature which will be of practical use to parents in the problems of home life, to secure more adequate laws for the care of blameless and dependent children, and to carry the mother love and mother thought into all that concerns childhood. The Congress believes that, with the aid of Divine Power, these objects will be accomplished.

As a result of this movement Parent-Teacher Associations have been established throughout the United States, the child-welfare movement has been promoted along various lines, legislation favorable to children has been encouraged, and a Home Education Division of the Bureau of Education established. Parent-teacher associations became popular and influential, and the two organizations voted to merge in 1924. See PARENTS AND TEACHERS, NATIONAL CONGRESS OF, in these volumes.

CONGRESS OF THE UNITED STATES, the legislative department of the national government. It is composed of two houses, a Senate and a House of Representatives. (For description of each house, see REPRESENTATIVES, HOUSE OF; SENATE).

The various Congresses of the United States are designated by number, and the life of each Congress is two years. Prior to 1933, Congress began its life on March 4 of odd-numbered years; the Congress which began March 4, 1929, and extended to March 4, 1933, was the Seventy-second Congress. Members of the House of Representatives are elected in November of even-numbered years. By the provisions of the Twentieth Amendment to the Constitution, proposed in 1932, and adopted in January, 1933, the terms of members of Congress, both Representatives and Senators, shall hereafter begin at noon on January 3, instead of March 4, as heretofore. The life of a Congress is the length of the term of the Representatives. The Senate is a continuous body; one-third of its members are elected in November of even-numbered years, for a six-year term.

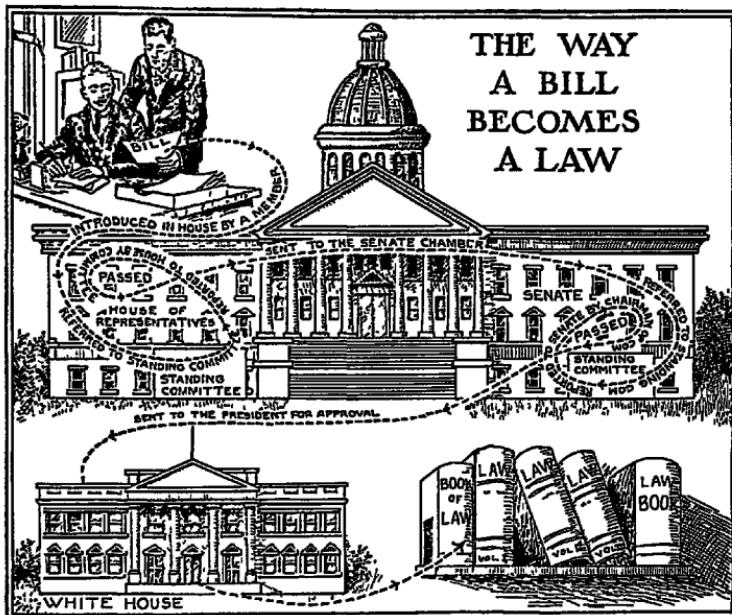
The Twentieth Amendment provides that "the Congress shall assemble at least once in every year", and it may, if necessary, remain in session full year—up to the date of the opening of the next regular session in the following January, but in ordinary times adjournment occurs at a much earlier date. When the terms of the members of the House of Representatives expire, newly elect-

ed members come forward to form the next Congress.

Congress is one of three coordinate departments of the national government, the others being the executive and judicial departments, and its powers are clearly set forth in the Constitution of the United States, Article I, Section 8 (see *CONSTITUTION OF THE UNITED STATES*). The salary of each member of Congress, excepting the presiding officer of each house, is \$10,000 per year. The Vice-President, who presides over the Senate, receives

progress of a bill from the desk of the Representative who prepared it, through the House of Representatives into the standing committee and back to the House, where it is passed; thence to the Senate, eventually to the White House for the President's signature, and thus becomes a law of the land.

Committees of Congress. A great many thousand bills are introduced into Congress at each session and it would be manifestly impossible for the Houses in open session to give consideration to even a very small



\$15,000, and the Speaker of the House of Representatives receives \$12,000.

How a Bill Becomes a Law. A formal statement of a proposed law is called a *bill*, and under this name is introduced either into the Senate or House of Representatives for passage. To become a law a bill must pass both Houses of Congress and be signed by the President, or be returned by the President without his signature to the House in which it originated, and passed again by both Houses by two-thirds' majority. If passed, it then is called an *act*. The following illustration graphically outlines the

portion of them. Committees are therefore named in each House whose duty it is to give particular consideration to such proposed legislation as shall be referred to them. For instance, a bill proposing that a territory be admitted as a state would be sent in each House to the committee on Territories. After a committee has given a bill due consideration, it reports to the House in regular session the result of its deliberations and either suggests that the House pass the bill, or that it be not passed. The recommendation of a committee is usually accepted, although this is not the invariable

rule. After a bill has passed one House and goes into the other, the second House may amend it in any particular, should it so desire, in which event in its amended form the bill must return to the House where it originated and be voted on again in its new form. If the two Houses cannot agree as to the final form a bill is to take, a conference committee of both Houses is usually appointed, and its decision is nearly always accepted.

Powers of Congress. The Constitution definitely prescribes what powers Congress may exercise. It names other powers by implication, and still others that are prohibited or in the exercise of which Congress is restricted. The following outline explains the three divisions:

- I. Express Powers.
 1. To lay and collect taxes
 2. To borrow money on the credit of United States
 3. To regulate commerce
 4. To establish a uniform rule of naturalization.
 5. To establish uniform laws of bankruptcy.
 6. To coin money and regulate its value.
 7. To fix the standard of weights and measures.
 8. To provide for punishment of counterfeiting
 9. To establish postoffices and post roads
 10. To grant patents and copyrights.
 11. To establish inferior United States courts.
 12. To have charge of matters related to war.
 13. To exercise control over United States territory.
- II. Implied and Incidental Powers.
 1. To purchase foreign territory.
 2. To establish military and naval academies.
 3. To make internal improvements
 4. To create corporations
 5. To make all laws necessary to carry into effect all powers.
- III. Powers Prohibited or Restricted
 1. To suspend the writ of habeas corpus.
 2. To pass a bill of attainder.
 3. To pass an ex post facto law.
 4. To lay direct taxes unless in proportion to the census
 5. To lay taxes on state exports
 6. To give preference to the ports of one state over those of another
 7. To compel vessels to enter any port other than the one bound for
 8. To draw money from the treasury without lawful appropriations being made.

CONIFERAE

9. To grant titles of nobility.
10. To abridge freedom of speech or of the press
11. To establish religion or prohibit its exercise
12. To deny the right of assembling to petition the government.
13. To confiscate private property.

CON'GREVE, WILLIAM (1670-1729), an English dramatist. His plays belong to the artificial school of comedy, which aimed rather at the production of a sustained flow of wit than at the precise delineation of character. The immorality by which they are marred is perhaps the fault of the age rather than of Congreve. The most important of his plays as viewed to-day are *The Old Bachelor*, *Love for Love* and *The Mourning Bride*.

CONIFERAE, kon'if'ərē, or PINE FAMILY, a large group of trees and shrubs which are found in the north and south temperate regions, and sparsely within the tropics. By the peculiar structure of their flowers they are separated widely from most of the flowering plants, and with three other small families they are known as gymnosperms. The trees have a somewhat uniform habit of growth. Usually the branches grow out horizontally and diminish in length toward the top, giving a conelike appearance to the whole tree. The leaves are slender and needlelike, or in the form of flat scales; and as on many species they persist through the winter, they have earned for the trees the names of *evergreens*. The name *coniferae*, or cone-bearing, is given these trees because of their peculiar fruit, which is cone-shaped and composed of heavy scales, under which are borne the seeds.

In some species these are long in ripening, and the scales cling firmly together until the seeds are ready for distribution, when the scales open and the seeds are blown about by the wind. The stamens are borne in small and usually inconspicuous cones, which fall as soon as the pollen has been distributed by the wind. They are so removed from the fertile cones that the latter can be fertilized only by the wind, and in consequence the yellowish pollen is composed of countless minute grains which fly about as a yellow dust. Not all the coniferae, however, bear cones. Some, as the juniper, form berries. Some species are very widely scattered, while others are closely restricted to certain localities.

Related Articles. Consult the following titles for additional information.

Cypress	Pine
Fir	Sequoia
Hemlock	Spruce
Larch	Yew

CONJUNCTION, *kon junk'shun*, in astronomy, the position of two of the heavenly bodies, as two planets, or the sun and a planet, when they are in the same direction from the earth. Sometimes one appears to cover the other, or the two appear to occupy the same spot in the heavens; and when this happens with the sun and the moon we call the phenomenon an *eclipse*. When a star and the moon are in conjunction it is called an *occultation*. When it is simply said that a planet is *in conjunction*, conjunction with the sun is to be understood. The planets nearer to the sun than the earth are said to be in *superior conjunction* or *inferior conjunction*, according as the sun is between them and us, or they are between the sun and us.

CONJUNCTION, in grammar, the part of speech which connects words, phrases, clauses and sentences. They are of two kinds: *coordinate conjunctions*, which connect elements of the same rank, as "The army rushed forward and fell upon the enemy," and *subordinate conjunctions*, which introduce dependent clauses, as "They could not advance because the bridges were destroyed." Conjunctions which are used in pairs, as *both-and, not only-but also*, are called *correlative conjunctions*. See **LANGUAGE AND GRAMMAR**.

CONJUNCTIVITIS, *kon junk ti'vetis*, or **OPHTHALMIA**, *of thal'mi a*, an inflammation of the mucous membrane of the eye socket and the outer surface of the eyeball. There are a number of distinct varieties of the disease, occasioned by differing causes. These varieties vary from the slight inflammation caused by an acute attack of catarrh to a purulent form that is highly contagious and frequently destroys vision. *Granular conjunctivitis*, or, as it is usually known, *granular lids*, is a contagious trouble, which is readily communicated by towels or wash basins that are not carefully cleaned. This is a common disease in crowded prisons or even in schools that are carelessly supervised.

It need not be acquired by a person who is habitually cleanly and careful in the use of public towels or bathing places, and the disease is promptly curable if intelligent measures are taken. Any eye trouble should have the attention of a reliable oculist.

Infection of the eyes of new-born infants

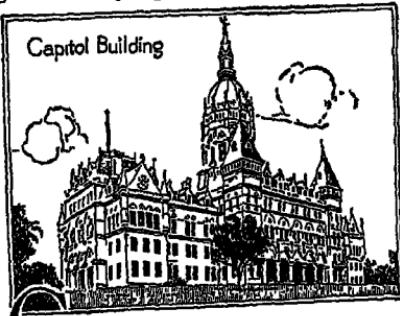
frequently assumes a form called *Ophthalmia neonatorum*. Its chief symptoms are discharge of pus and badly-swollen lids. Solution of silver nitrate, applied by a competent nurse or doctor, should be administered at once. Neglect causes total blindness.

CONKLING, ROSCOE (1829-1888), one of America's greatest statesmen of the last half of the nineteenth century, was born in Albany, N. Y. In 1850 he was admitted to the bar and in the same year became district attorney for Oneida County. In 1858 he was elected mayor of Utica and within a few months was rewarded for long political activity by nomination and election to Congress. He served several terms, and in January, 1867, took his seat in the United States Senate, being reelected in 1873 and in 1879. He vigorously supported Grant in his campaign for the Presidential nomination in 1880, and he was extremely hostile to President Garfield's administration, claiming, with his colleague, Thomas C. Platt, the right to control Federal appointments in his state. They finally resigned their seats in the Senate and appealed to the legislature of New York for a reelection as a vindication of their course, but they were unsuccessful. Conkling later declined the nomination of Justice of the United States Supreme Court.

CONNAUGHT, *kon'nawt*, ARTHUR WILLIAM PATRICK ALBERT, Duke of, (1850-), son of Queen Victoria, and a Governor-General of Canada, was born at Buckingham Palace on May 1, 1850. He entered the Royal Military Academy, Woolwich, at the age of sixteen and at eighteen was assigned to the Royal Engineers. He then served for a few months with the Royal Artillery, and in August, 1869, was transferred to the Rifle Brigade. He was promoted captain in 1871 and successively won promotion to major, lieutenant-colonel, colonel, major-general and to the rank of general in 1893. In Egypt, in 1882, he commanded the Guards Brigade at the battle of Tel-el-Kebir. He was mentioned several times in despatches, was made Companion of the Bath, and was thanked by Parliament. From 1886 to 1890 the duke was in active command of the Bombay army in India; from 1890 to 1898 he was district commander at home, first of the southern district, later of the Aldershot district. He succeeded Lord Roberts in 1900 as com-

mander-in-chief of the forces in Ireland. Four years later, when the war office was reorganized, the duke was appointed to the newly created office of inspector-general of the forces, which he held until 1909, when he became commander in chief in the Mediterranean. He remained stationed at Malta for two years and then returned to England. On October 13, 1911, he became Governor-General of Canada, retiring in 1918.

CONNEAUT, *kon'ne-aw't*, OHIO, in Ash-
tabula County, sixty-two miles northeast of
Cleveland, near the Pennsylvania state line,
on Conneaut Creek, which forms a good
Lake Erie harbor, and on the Lake Shore &
Michigan Southern, the Nickel Plate and
Bessemer & Lake Erie railroads. The first
white settlers of Northern Ohio landed here
in 1796, and the town was incorporated as
a village in 1832. Vast quantities of iron
ore are received here from the Minnesota-
Michigan fields. The place contains railroad
shops, and canning and other factories.
Population, 1920, 9,343; in 1930, 9,691, a
gain of nearly 4 per cent.



CONNECTICUT, *kon'ne-tik'ut*, one of the original thirteen states of the American Union, and one of the smallest in area, larger only than Rhode Island and Delaware. It is popularly called the Nutmeg State, because of a legend that once an unscrupulous Connecticut manufacturer made and sold wooden nutmegs. Another name for it is THE LAND OF STEADY HABITS, a compliment to its conservative people from colonial times. The name of the state is from an Indian term meaning long river, referring to the Connecticut River, which flows through it from north to south. The state flower is the mountain laurel.

The area of Connecticut is 4,965 square miles, of which 145 square miles are water.

The population in 1920 was 1,380,585, which had increased to 1,606,903 by the Federal census of 1930. There were, in 1930, 333 people to the square mile, while the entire United States averaged but 41 in each square mile. Six per cent of the population over ten years of age is classed as illiterate, being unable to write; this is largely due to the presence of large numbers of foreigners.

The People. Connecticut is a manufacturing state, hence the people live largely in cities. One-third of the state's inhabitants are in four cities—New Haven, Bridgeport, Waterbury and Hartford. Many foreigners are in these cities. About one-third of the people are of native parentage; an equal number are native born of foreign parentage, and the remainder, excepting 15,000 negroes, are foreign-born.

Surface. Connecticut occupies the southern slope of the hill region of New England, and its surface includes three great river valleys, which cross the state from north to south and are separated from one another by ranges of low hills. In the eastern part of the state is the valley of the Thames, which with its two tributaries drains this part of the state into Long Island Sound. The Connecticut valley occupies the central part of the state. The western part of the state is traversed by the Berkshire Hills, which are a continuation of the range crossing Massachusetts. The Housatonic river valley, with the Naugatuck and other tributary streams, drains this western section. There are a number of low mountains in this region, the highest being Bear Mountain, which attains an altitude of 2,354 feet. Other peaks worthy of mention are Gridley Mountain, Riga Mountain, Bradford Mountain, Dutton Mountain and Mount Ball. The southern portion of the state along the coast is quite low and level, but inland the surface is everywhere characterized by low hills, all of which are more or less stony. Along the streams are narrow, level flood plains, usually called meadows.

Climate. The climate is subject to sudden changes, the winters are quite severe and among the hills and mountains the snows are usually deep. The summers are hot. The rainfall is everywhere sufficient. The climate is considered healthful, and the pleasantest season is autumn.

Mineral Resources. Hematite occurs in a

number of places, and some of the iron mines have been worked since 1732. There are also small deposits of lead, nickel, cobalt and other metals, but not in sufficient quantities to pay for working. The brown sandstone, known as brownstone, and valued so highly for the construction of residences, is quarried near Middletown. There are also quarries of granite, marble, flagstone, feldspar and stone suitable for the manufacture of lime and cement. The annual output of mineral products is about \$3,300,000.

Agriculture. Agriculture is not a leading industry, but the soil in general is fertile, and most of it is tilled. The chief crops are corn, oats, potatoes, hay and tobacco. The nearness to New York and other large cities affords the Connecticut farmer a good market for garden produce, and truck farming is quite extensive along the streams. Dairying is also an important industry. The tobacco crop is the most remunerative of all agricultural products, being worth to the growers about \$11,000,000 each year. Corn is next, worth about \$2,000,000.

Manufactures. Connecticut is one of the leading manufacturing states of the Union. According to government statistics it produces more than half of the brass products, more than sixty per cent of the clocks, nearly half of the hardware, over three-fourths of the plated and britannia ware and nearly sixty-five per cent of the needles and pins made in the United States. Besides these industries, others which have attained large proportions are the manufacture of rubber goods, textiles, including cottons, woolens and silk fabrics, and machinery. New London has long had an extensive shipbuilding plant, where some of the largest steamers afloat have been constructed. The development of Connecticut's manufacturing industries is due to her favorable location in reference to large cities, and to the abundance of water power.

Airplane engines and other parts for airplanes are made in Connecticut factories, particularly in Hartford and Bridgeport. Ball bearings and other metal parts for automobiles are produced in large quantity.

Transportation. The Connecticut River is navigable for steamers to Hartford, and beyond for small boats, and the Thames is navigable as far as Norwich. The state contains 995 miles of railway, nearly all of

CONNECTICUT NUTMEG STATE



State Seal



Mountain Laurel,
State Flower



Connecticut
Wakes the
World



Statue
of
Israel Putnam,
in Windham County



Items of Interest on Connecticut

The Connecticut valley has the most fertile land in New England.

Garnet and quartz are quarried in large quantities in the western part of the state for sandpaper and polishing purposes.

Connecticut produces three-fourths of the tobacco crop of New England, and in value ranks fifth among the states of the Union.

Other important agricultural products are hay, potatoes, orchard fruits, and eggs.

Connecticut formerly led all other states in the production of fur hats, generally known as "derby" and "soft" hats, but it is now second to Pennsylvania. This industry is centered in Danbury, Norwalk and Bethel.

The leading industry of Connecticut is the production of rolled brass and copper, in which it ranks first among the states of the Union.

It is also first in the production of hardware, plated and britannia ware, brass castings and brass finishings, clocks, watches and corsets.

It is second in the manufacture of sewing machines and attachments, cutlery and edge tools, and rubber goods.

Connecticut leads the United States in the special manufacture of small wares such as lamps and reflectors, needles and pins, buttons, and bells, screws and hardware.

Questions

What is the area of Connecticut? Which states are smaller?

What are the principal rivers?

What are the chief agricultural products?

How does Connecticut rank in the production of "derby" and "soft" hats? Clocks? Cutlery? Boots and shoes? Sewing machines?

What can you tell about Hartford, Bridgeport, Waterbury, Ansonia?

What is the importance of New Haven? What are some of its manufacturing industries?

When was Yale University founded?

which is owned or leased by the New York, New Haven & Hartford system. This road owns or controls 850 miles of track. Electric railways are found in all the important towns, and the state maintains over 9,000 miles of highway. The numerous inlets on the coast provide good harbors, and New London, New Haven, and Bridgeport are important ports. The state carries on an extensive commerce, owing to its great variety of manufactures.

Education and Institutions. Connecticut maintains a good system of public schools, supported in part by income from the state school fund and in part by local taxation. There are normal schools at Danbury, New Haven and Willimantic, and a teachers college at New Britain. Connecticut State College is located at Storrs, and among higher institutions of learning the most noted are Yale University at New Haven, Wesleyan University at Middletown, Trinity College at Hartford, and Connecticut College for Women at New London.

The state maintains a hospital for the insane at Middletown and a school for the feeble-minded at Lakeville, also two institutions for the deaf and one for the blind. There are also numerous hospitals and sanitariums, and each county has a temporary home for the indigent. The state's prison is at Wethersfield, and there are reformatories at Middletown, Cheshire, Hartford and New Haven. All of these institutions are under the supervision of a state board of charities.

Cities. The largest city of Connecticut is Hartford, which had a population of 164,072 in 1930, according to the Federal census. The next five cities, in order of size, were New Haven (162,655), Bridgeport (146,716), Waterbury (99,902), New Britain (88,128), and Stamford (46,346).

Government. Connecticut has been organized since 1639. In 1639 a constitution was adopted which, it is claimed, was the first in the world formed by a social compact. This constitution was confirmed by Charles II in 1662. It was replaced by a state constitution in 1818.

The general assembly consists of a Senate of thirty-five members and a house of representatives of 258 members. The state officers are a governor, lieutenant-governor, secretary of state, treasurer, comptroller, attorney-general, adjutant-general and commissioner of insurance. The term of office is two

years. The supreme court consists of a chief justice and four associate justices.

History. The territory of Connecticut was granted to the Plymouth Company in 1606 and was explored by the Dutch in 1614. In 1623 they established a trading post at Hartford. Meantime, the English had become interested in the region, and in 1631 the land from Narragansett Bay to the Pacific was granted to Lord Say and Sele, who soon afterward founded Saybrook. Early in 1636 Thomas Hooker led his congregation westward from the coast and settled at Windsor, near Hartford. Others followed and established English towns in the neighborhood. English Puritans founded a settlement at New Haven in 1638, which was to be governed largely by the Scriptures.

Both the Connecticut and New Haven settlements expanded, and the former became known as one of the most prosperous and liberal of the New England colonies. Connecticut absorbed New Haven in 1662. In the struggle against the Crown to obtain the charters, Connecticut took a prominent part, and when Governor Andros appeared in 1687 to demand the charter, it was hidden away until 1693. In the French and Indian Wars Connecticut took an active part, and, also, in the pre-Revolutionary discussion. The state furnished the Continental army about 30,000 men, was one of the first to form an independent government (1776); the war governor, Jonathan Trumbull, was one of the closest friends and advisers of Washington.

Connecticut suffered through raids against its defenseless towns, the last one being directed by the traitor Benedict Arnold, in September, 1781. Its representatives, Sherman, Johnson and Ellsworth, were prominent in the Constitutional Convention and proposed the present system of representation by states in the Senate and according to population in the House of Representatives. Connecticut opposed the War of 1812 and was prominent in the Hartford Convention in 1814.

The sentiment of the state was against slavery and in favor of union, when the crisis in the slavery struggle came. The war governor, Buckingham, was a prominent figure in the period. Hartford and New Haven were long the joint capitals of Connecticut, but the former became the sole capital in 1873.

Related Articles. Consult the following titles for additional information.

Ansonia	New Britain
Berkshire Hills	New Haven
Bridgeport	New London
Bristol	Norwich
Charter Oak	Stamford
Connecticut River	Torrington
Hartford	Waterbury
Hartford Convention	West Haven
Meriden	Willimantic

CONNECTICUT RIVER, the largest river in New England. It rises on the north border of New Hampshire, forms the boundary between Vermont and New Hampshire, passes through the west part of Massachusetts and the central part of Connecticut and falls into Long Island Sound. It is about 375 miles long and drains an area of over 1,100 square miles. It is navigable for large steamers for about fifty miles from its mouth. Its chief branches are the Passumpsic, White, Deerfield, Farmington and Chicopee rivers.

CONNECTIVE TISSUE, one of the elementary structures of the body. It forms the bones, cartilages, ligaments and a framework for nervous, glandular and muscular tissue. Connective tissue includes the areolar, adipose, retiform, white fibrous, yellow elastic, cartilaginous and osseous. The *areolar* tissue is widely distributed, as it is found in the true skin, in the outer sheaths of blood vessels and in the mucous membranes. It makes the sheaths for glands, nerves and muscles and connects the finest parts of the different organs. It is composed of bundles of fine fibers, interlacing in every direction. *Adipose*, or fatty, tissue, occurring in nearly all parts of the body, but most abundant under the skin and around the kidneys, is not found in the substance of the lungs and some other organs. It exists in small lobules, or masses, surrounded by areolar tissue. No nerve fibers terminate in the fatty tissue, but it contains blood vessels.

White fibrous tissue is arranged in wavy parallel bundles which give to the surface of tendons the appearance of watered silk. It constitutes the tendons of the muscles, the ligaments around joints, is found in the periosteum, pericardium, the largest tissues around the muscles and the sclerotic coat of the eye. *Yellow elastic* tissue, as its name implies, is very elastic and can often be extended sixty per cent of the length before breaking. It is found in the skin, the trachea, the true vocal cords and in veins. *Cartilaginous* tissue differs from other connective tissue in density and is composed of cells

imbedded in a substance called the matrix (see CARTILAGE). It contains no nerves. It furnishes attachment for muscles and ligaments, binds bones together and keeps the larynx and trachea in their tubular shape. *Ossaceous* tissue makes the solid part of the bone (see BONE).

CONNELLSVILLE, *kon'elz vil*, Pa., a city in Fayette County, fifty-six miles southeast of Pittsburgh, on the Baltimore & Ohio, the Pennsylvania and the Western Maryland & Lake Erie railroads and on the Youghiogheny River. It is in the center of a region noted for its coke, coal and natural gas. The industries center around these, and there are also glass works. A Federal building was erected in 1912; there is a Carnegie Library, and the city has two hospitals. Population, 1920, 13,804; in 1930, 13,290, a loss of 4 per cent.

CONNOR, RALPH. See GORDON, CHARLES WILLIAM.

CONRAD, JOSEPH (1857-1924), an English novelist, born in Poland, where he passed his youth. At the age of seventeen, on the death of his father, he went to Marseilles, and served on French ships in the Mediterranean for two years. In 1878, he went to England, and for the next four years rose from able seaman to master on British ships. He acquired such facility in the use of the English language that he adopted it as the medium of his literary work. His novels display a strong and idiomatic style and vivid powers of description. They present vivid pictures of seafaring life in the East and elsewhere.

His first novel, *Almayer's Folly*, appeared in 1895. Among his later works were the following: *An Outcast of the Islands* (1896); *The Children of the Sea* (1897), *Lord Jim* (1900); *Typhoon* (1902), *The Mirror of the Sea* (1906); *Point of Honor* (1908); *Chance* (1913), *Notes on Life and Letters* (1921); *The Rover* (1923); and *Under Western Eyes* (1923). *A Life of Conrad* by Ford Madox Ford appeared in 1924.

CONSCIOUSNESS, *kon'shūn̄s*. See PSYCHOLOGY.

CONSCRIPTION, *kon skrip'shun*, or **DRAFTING**, terms signifying the enrollment of men for military service by compulsion. In Europe the principle of compelling all citizens to undergo military training and of inducting them into the army for active service in time of war is quite generally accepted, but previous to the World War England

resorted to the volunteer system to keep up its relatively-small armies. The various modifications of the conscription system as it is applied in Europe will be found in the article ARMY. In most countries the naval service is maintained by means of volunteers, but this is a matter of sentiment. There is no reason why the conscription principle should not be applied to the navy as well as the army.

Traditionally, the American people have always opposed universal military service, which is conscription in a broad sense, but drafting was resorted to as necessary in the Revolutionary, the Civil, and the World wars. During the Civil War serious draft riots occurred in New York in opposition to conscription, but this opposition was soon crushed. The nation had no cause thereafter to resort to conscription until its entrance into the World War, in April 1917. It was realized then that the existing military machinery was wholly inadequate to the situation, and in May Congress passed the Selective Conscription Bill, which provided for the registration of all men between the ages of twenty-one and thirty, inclusive.

Under the operation of this law, which the country accepted with remarkable unanimity, 2,400,000 men had been inducted into service and received training up to August, 1918. In that month a second law was passed providing for the registration of men between eighteen and twenty-one and thirty-one and forty-five inclusive.

Canada adopted conscription in 1917. The act provided for conscription up to the number of 100,000 men. The act was not popular in the province of Quebec and enlistment was slow, until March, 1918. At that time certain exemptions were cancelled, although opposed by the farming interests. The name "conscription" was changed to "draftee," and the quota was soon filled. See WORLD WAR.

Some Facts Conscription Developed. Every young man drafted into the army of the United States in 1917 and 1918 was subjected to a rigid physical examination. Almost one-third of them were rejected as unfit for military service, on various physical grounds—flat feet, defective eyesight, impaired hearing, unsound lungs, organic heart trouble. Many thousands of the drafted men—these being mostly of foreign birth or parentage—could not read English well enough to understand routine orders.

Thus conscription taught the lesson that intelligent citizenship and good health is a greater guarantee of peace and equality than guns and trained soldiers

The peace conference, in Paris, which settled the issues of the World War, determined that conscription should be abandoned in all countries, but the agreement was ignored later in countries under dictators

CONSERVATION. Until within recent years the attention of Americans had never been directed to the great waste that has taken place in connection with the country's natural resources. Half of the contents of coal mines has been wasted in mining; forests have been carelessly cut over and have been burned; water power has not been utilized or has been given to private enterprises and thus closed to the use of all the people. These first two gifts of nature have been used as freely as though the supply were exhaustless, and the third has been largely ignored by the general public, but there has come an awakening to the necessity of remedying the reckless waste that has already jeopardized the future.

Another element to be recorded in conservation is preservation of soil fertility. It ranks in importance with the other three. This would appear to be vital only to the agricultural community, but really it affects in an uncertain way every citizen, for we are all dependent upon the products of the soil for our existence.

National interest in conservation began in 1908, in which year President Roosevelt called a conference of the governors of all the states and other representative men to meet in Washington to consider measures for preserving the public lands, streams, forests and minerals from monopolies and from unnecessary waste. Following this meeting, on June 8 the President appointed a national conservation commission, consisting of 48 members, representing all the states. This commission organized with Gifford Pinchot as chairman, and was divided into the following sections: water resources, land resources, forest resources and mineral resources. A commission was also appointed to devise plans for the cooperation of state governments with the national government.

One of the immediate results of this study of the nation's resources was an order of the President withdrawing public lands from possible purchase by private interests to the ex-

tent of almost 235,000,000 acres, so that the natural riches in them might be conserved for the future. Since then other millions of acres have been saved from waste in like manner. On many areas not all rights have been retained by the government; surface rights may be retained, or mineral, or water rights, while one or more of the others have been allotted to private interests under proper safeguards.

The Natural Conservation Association was organized in 1908, and has permanent headquarters in New York City. Its purpose is to unite in one great national organization all who take an active interest in the conservation movement.

CONSERVATIVE, *kon'ser'veat̄iv*, in Great Britain and Canada, the political party which favors the maintenance of existing conditions rather than the introduction of radical reforms, when such conditions are in the main satisfactory. The Conservatives in England are the successors of the Tories. See LIBERAL; TORY.

CONSERVATORY, *kon'ser'veāt̄or̄i*, a school giving instruction in all branches of music. Conservatories were originally benevolent establishments attached to hospitals, charitable or religious institutions. In France the musical school established in connection with the Opera in 1795, under the name of *Conservatoire de Musique*, is now the most famous school of music in the world. The Conservatorium at Leipzig is perhaps the most influential in Germany. The most noted American conservatories are the National Conservatory in New York, the New England Conservatory in Boston and the Peabody Institute in Baltimore. The name is also applied in America to a botanical garden or other collection of flowers and shrubs.

CON'SOLE, in architecture, a projecting ornamental bracket, often in the form of a scroll or letter *S*. It is employed to support a cornice, bust, vase or the like, but it is an almost purely decorative element. See CORBEL.

CONSONANT, *kon'son̄ant*, a letter so named because it is usually sounded in connection with a vowel. Some consonants have hardly any sound, even when united with a vowel, serving then merely to determine the manner of beginning or ending the vowel sounds; as in *ap*, *pa*, *at*, *ta*. In uttering a consonant there is always greater or less

obstruction of the breath by the organs of speech; in uttering a vowel the vocal passage is open, though modified in shape. Because *s*, *z* and *v* are consonants not requiring connecting vowels, they may be considered semivowels. See VOWEL.

CONSORT, a term derived from the Latin *censors*, meaning *partner*. It is used most commonly to designate the husband or wife of a ruler; for example, it is the title of Duke Henry of Mecklenburg-Schwerin, husband of Wilhelmina of Holland. Prince Albert, the husband of Queen Victoria, was known officially as Prince Consort. The power of a royal consort is usually defined by the legislative body of the nation. This precaution is deemed necessary, since the consort is generally a foreigner.

CONSPIRACY, in law, a combination of two or more persons to accomplish an unlawful purpose or a lawful purpose by unlawful means. According to modern statutes it is necessary, in order for the offense to be complete, that some open act to accomplish the object of the conspiracy be committed. To be guilty of conspiracy it is not essential that the object of the conspirators be accomplished. Proof of interest is sufficient. In this case the offense amounts to a felony, and is punishable by imprisonment.

CONSTABLE, *kun'sta b'l*, the title applied to the chief constabulary officer or peace officer of a township; he is elected by the voters annually or biennially. Usually there is a constitutional provision for four constables in each township of a state. They are charged with the maintenance of the public peace and in the prosecution of their duties they arrest offenders, serve warrants, execute writs, etc. The name comes to us from medieval times, where the constable was the keeper or governor of a castle under the sovereign. Later, an officer bearing this title was the first military adviser of the king, and, in the latter's absence, commander in chief of the army. In England, at a date nearer the modern era, the constables had oversight of the king's peace in their several districts.

CONSTANCE, *kun'stahnts*, LAKE, a lake in Central Europe at the north base of the Alps, bounded by Switzerland, Austria and the German states of Bavaria, Baden and Wurtemberg. It extends northwest and southeast, and at its northwest extremity it divides into two branches, the north being

called Ueberlingen See, and the south, Untersee, or Zeller See. The Rhine enters it at the south and flows out at the northwest. Lake Constance is about forty miles long and nine miles wide, and is about 1,300 feet above sea level. It is subject to peculiar risings and falls, which occur suddenly and unexpectedly.

CONSTANTINE, *kon'stan tine*, ARCH OF, a triumphal arch in Rome, dedicated to Constantine, in 315, in memory of his victory over Maxentius. It is the best preserved specimen of ancient Roman monuments, having escaped the ravages of the Middle Ages, probably because Constantine was a Christian emperor.

CONSTANTINE, CAIUS FLAVIUS VALERIUS CONSTANTINUS (274-337), a Roman emperor, surnamed *The Great*. After the death of his father, Constantine Chlorus, in 306, he was chosen emperor of the West by the soldiery and in 325 he became the sole head of the Roman Empire. His administration of internal affairs was marked by a wise spirit of reform and the adoption of Christianity as the state religion. In 329 he removed his capital from Rome to Byzantium, which was called after him Constantinople (see CONSTANTINOPLE). In 337 he died near Nicomedia, leaving his empire to be divided among his three sons, Constantius, Constantius and Constans.

CONSTANTINE I, *kon'stan teen* (1868-1923), king of Greece from 1913 to 1917, and from 1920 to 1922. He was the son of George I (which see). In 1889 Constantine married the Princess Sophia, sister of Emperor William II of Germany. Having entered the army, he rose to important commands, and in the war of the Balkan allies against Turkey (1912-1913), his personal bravery and the brilliant successes of his troops made him a public idol. At the outbreak of the World War Constantine had to face many serious problems, and his efforts to keep the country neutral led to a rupture with the pro-allied faction, headed by Venizelos. Finally, in June, 1917, the Venizelists gained the upper hand and forced Constantine to abdicate in favor of his second son, Alexander. He was restored in 1920, but in 1922, following war with Turkey in Asia Minor, he was forced to abdicate again, his eldest son, George, succeeding him. See GREECE, subhead *History*; WORLD WAR; GEORGE II (Greece).



A Public Well

CONSTANTINOPLE, *kon'stan tē' nō plē*, a celebrated city on the southeastern boundary between Europe and Asia, for over four centuries after 1453 the capital of the Turkish Empire. In 1918, at the close of the World War, Constantinople was occupied by the allies, but the Sultan was allowed to remain, as the head of the Turkish government. In November, 1922, the Grand National Assembly, meeting at Ankara in Asia Minor, deposed the Sultan, and Constantinople ceased to be the capital of Turkey, and its name was changed to Istanbul.

Constantinople occupies a picturesque site on a promontory which juts into the Sea of Marmora. Stamboul, the site of the first settlement, and the Mohammedan center, lies on the south shore of the Golden Horn, a long, narrow inlet of the Bosphorus; the latter is the historic strait which connects the Sea of Marmora and the Black Sea. On the north and opposite shore of the Golden Horn lie the suburbs of Galata and Pera, the former a business section, and the latter the modern quarter of the foreigners. Scutari, which is governed as a part of the political district of Constantinople, is a suburb on the Asiatic side of the Bosphorus. On three sides Stamboul is surrounded by water, and the fourth and land side is guarded by a double wall erected in 447 by the Emperor Theodosius. The city has thus an admirable situation for commerce and for defense. It has been coveted for centuries by all the European powers, and the alliance of Turkey with Germany in the World War made it a German gateway to the East.

Constantinople of To-day. This great Mohammedan stronghold is often called a "queen of cities," but for many years it was a very unsightly queen. Its more than 300 mosques gave it a most picturesque sky-line, but its streets were narrow, dirty and unsanitary, and modern improvements were entirely lacking. Since the revolution of 1908-1909 much progress in modernization has been made. Many dreary wooden buildings have been replaced by cement structures,

a splendid granite-paved bridge joins Stamboul and Galata, and the sounds of electric cars and motor trucks are heard in the streets. In Pera there are many fashionable shops, a striking contrast to the Oriental booths of the Grand Bazaar in Stamboul, which has lost some of its former prestige. Of the mosques, the most famous is that of Saint Sophia, converted into a mosque in 1453, and in 1923 renamed Mosque Mehmedie (Mosque of Mahomet). Another magnificent mosque is that of Solyman. Besides these, there are the mosques of the Sultanah Valide, built by the mother of Mohammed IV, and of Sultan Achmet, one of the most conspicuous objects in the city.

Other interesting features are the Museum of Antiquities, in Seraglio Park; the group of government buildings known as the Sublime Porte, the Serpent Column, which the Emperor Constantine brought to the city from Delhi; and a number of fine aqueducts connected with some of the largest underground reservoirs in the world.

In Constantinople there have been middle-class schools for boys for a number of years, and in 1918 five similar institutions for girls were established. A university, founded in 1900, and reorganized in 1918, comprises schools of arts, theology, law, medicine and science. A modern building occupying the Scutari shore of the Bosphorus houses the medical department. Robert College is an American institution for men, and there are, besides, various special schools.

Industrially, Constantinople is known for its handmade goods. Factory products are made up chiefly of tobacco goods, iron wares and fezzes. In normal years the export and import trade is immense, as the great harbor, the Golden Horn, can accommodate over 1,000 of the largest ocean liners. There is direct railroad connection with the rest of Europe, and ferry and steamship service is maintained for local transportation. No exact population figures were known before 1927, but in that year its population was reported as 690,857; with suburbs, 794,444.

History. In mythology the site of Constantinople was reached by the Argonauts, but the first historic event was the founding of a town called Byzantium, by Greek adventurers six centuries before Christ. Darius II invaded the region in 513 B.C., but was only in temporary control of the settlement. The Emperor Constantine, inspired

by the commercial and strategic advantages of the site, selected the place as the capital of his empire in 330, and named it Constantinople (see BYZANTINE EMPIRE).

During the Crusades the city was twice conquered by the Christians, but in 1453 the Turks captured it once for all. At that time hundreds of Greek scholars fled to Christian Europe, and their flight had an important influence on the revival of learning. Then for centuries Constantinople was an important feature of international politics, with the European nations playing against each other and all striving to gain control of this gateway to the East. In 1915 the Allies made a determined effort to capture it by way of the Dardanelles, which joins the Sea of Marmora and the Aegean Sea, but the result was a costly failure. With the rise of Mustapha Kemal Pasha, who organized the republic (1922), the abolition of the Caliphate, and removal of the capital to Ankara, Constantinople's glory was dimmed.

Related Articles. Consult the following titles for additional information.

Byzantine Empire	Seraglio
Constantine	Sophia, Church of
Dardanelles	Saint
Renaissance	Turkey

CONSTELLATIONS, *kon stel'ə shuns*, the groups into which astronomers have divided the fixed stars, and which have received names for convenience in description and reference. It is plain that the union of several stars into a constellation, to which the name of some animal, person or inanimate object is given, must be entirely arbitrary, since the several points (the stars) may be united in a hundred different ways, just as imagination directs. The grouping adopted by the Egyptians was accordingly modified by the Greeks, though they retained the Ram, the Bull, the Dog and others. The Greek constellations were again modified by the Romans, and again by the Arabians. At various times, also, Christianity has endeavored to supplant the pagan system, the Venerable Bede having given the names of the twelve apostles to the signs of the zodiac, and Judas Schillerius having, in 1627, applied Scripture names to all the constellations. The old constellations have, however, been for the most part retained.

The different stars of a constellation are marked by Greek letters, α denoting those of the first magnitude, β those of the second and so on. Stars of the sixth magnitude are the smallest visible to the naked eye. Several

stars in a constellation may have also particular names.

This subject is treated more fully in the article astronomy, in which there are charts showing the chief constellations. See, also, Zodiac, Bear, Great, Cassiopeia, Orion.

CONSTIPATION, *kon sti'pa'shun*, inactivity of the bowel movements. Constipation is one of the commonest ills of mankind, and is the source of numerous other ills. Its seriousness lies in the fact that it causes the accumulation of waste matter in the intestines, which means the retention in the system of countless hordes of poisonous germs. According to one authority this condition is responsible for premature old age. This theory still lacks positive proof, but that constipation is a direct menace to health is disputed by none. Lack of exercise, carelessness in heeding nature's call, and eating of concentrated foods are common causes of sluggish bowel movements. Change of one's habits is often sufficient to work a cure; hygienic remedies are far preferable to the use of medical laxatives, as the latter tend to aggravate the trouble and afford only temporary relief.

To avoid eating too much bulky food, one should include in the diet a good deal of fruit, vegetables, especially spinach and rhubarb, breads and cereals containing the husks of the grains, such as bran preparations, and cold water. Foods like the above are helpful because they leave a residue which makes bulk in the colon and acts as a stimulant to the bowels. Oils are also useful because they act as lubricants. Various nonabsorbable mineral oils are now on the market, and have proved valuable to many persons suffering from chronic constipation. For those who sit in offices all day, bending exercises and long walks each day are recommended.

CONSTITUTION, a body of rules by which the activities of a state are governed. It may be either a written instrument of a certain date, or an aggregation of laws and usages which have grown up in the history of the state. Constitutions are of two kinds, considered as to their place in the political system of different states as follows:

(1) Those which constitute the supreme fundamental law, combining and limiting the legislative and executive departments of government

(2) Those which are only ordinary law, leaving the legislative department supreme in the government

Of the former class the Constitution of the United States is the greatest example. Of the latter the constitution of Great Britain is typical. In the British system of government Parliament is supreme. Its decrees form a large part of the constitution of the Empire; but the constitution also contains or includes:

(1) Important treaties, such as the acts of union with Scotland (1707) and Ireland (1801).

(2) Decrees of the executive which have been approved or given silent consent until they form a part of the administrative system of the country.

(3) Agreements, declarations and compacts made between the monarch and the people or Parliament, such as the Magna Charta (1215), the Declaration of Rights (1689), the Act of Settlement (1701).

(4) The great body of the common law; (5) many practical methods and means devised for carrying on government activities, but not having the direct legal sanction of any competent authority.

The Constitution of the United States differs in one important respect from the constitutions of the states of the union. The former formed a new government of enumerated or delegated powers, the source of authority being the states. The state constitutions are but instruments placing restrictions upon the powers of government already existing. See CONSTITUTION OF THE UNITED STATES; UNITED STATES, subhead *Government*; SUPREME COURT.

CONSTITUTION, THE, the most famous vessel in the history of the American navy. It was launched October 20, 1797, but was not equipped until the following year. In the war with the Barbary powers it was Commander Preble's flagship and took part in several bombardments of Tripoli. In July, 1812, under the command of Captain Isaac Hull, it engaged in a spirited race with a British squadron and escaped. On August 19 it fought a famous battle with the *Guerrriere*, an English frigate under Captain Dacres, off Cape Race. It left the British vessel a total wreck after a contest of a half-hour. In 1828 the *Constitution* was condemned as unseaworthy and was ordered to be destroyed, but popular sentiment, aroused partly by Holmes's poem, *Old Ironsides*, compelled the abandonment of the project, and the *Constitution* was rebuilt in 1833. It was put out of commission in 1855, was again partially rebuilt

in 1877 and was stored at the Boston Navy Yard in 1897. It was restored to its original design in 1931 by children's contributions, then was exhibited in coast cities.

CONSTITUTIONAL UNION PARTY, a name assumed by a remnant of the Whig party in the South in the election of 1860. It nominated John Bell of Tennessee for President and Edward Everett of Massachusetts for Vice-President. Its platform announced no definite principles regarding the slavery controversy, but claimed to recognize "no political principle but the Constitution of the country, the union of the states and the enforcement of laws." It received no support in the North, but carried the border states of Kentucky, Tennessee and Virginia. See POLITICAL PARTIES IN THE UNITED STATES.



CONSTITUTION OF THE UNITED STATES, the supreme fundamental law of the United States of America, by which all powers of the national government are established and limited. The objects for which it was written and adopted are completely covered in the Preamble:

"We, the people of the United States, in order to form a more perfect union, establish justice, insure domestic tranquillity, provide for the common defence, promote the general welfare, and secure the blessings of liberty to ourselves and our posterity, do ordain and establish this Constitution for the United States of America."

The states, after the Revolutionary War, had been loosely held together by the Articles of Confederation (see CONFEDERATION, ARTICLES OF). The Articles had not been in operation for a year before it was evident that they were in many respects defective as the fundamental law of the states. To remedy them a convention of delegates of all the states was frequently suggested. Such a demand was even made by various state legislatures between 1781 and 1786. In the latter year a resolution of the legislature of Virginia brought together a convention representing a number of states for the purpose of considering ways and means of advancing the commercial interests of the

nation. This meeting was called the Annapolis Convention (which see).

Five states sent delegates, and they reported unanimously that existing faults could not be remedied by any means at hand, as the trouble could be traced directly to the insufficient Articles of Confederation. It was recommended that a larger convention of all the states meet without delay to consider the Articles and amend them. This report attracted wide attention and when it reached the members of Congress it was approved. On February 21, 1787, Congress advised the states to send delegates to a national convention in Philadelphia, and May 14th was named as the date of meeting. The call was—

" * * * for the sole and express purpose of revising the Articles of Confederation and reporting to Congress and the several Legislatures such alterations and provisions therein as should, when agreed to in Congress and confirmed by the States, render the Federal Constitution adequate to the exigencies of Government and the preservation of the Union."

The number of delegates chosen to this convention was sixty-five; ten did not attend. The Convention remained in session until September 17, when its work was completed. It was found impossible to make satisfactory amendment or revision of the Articles of Confederation, and within the short space of four months a new Constitution was written. It was said by Gladstone that no other body of men in all the history of the world, regardless of the time employed, ever devised a system of government so admirable in its plan and so perfect in its operation as came from the hands of these fifty-five American patriots. That there was no unanimity of opinion in the Convention is apparent from the fact that sixteen members refused to sign the completed Constitution or left the convention before it was ready to be signed. The signatures of only thirty-nine of the members were appended to it.

In Article VII it was provided that the Constitution should become effective as soon as it was ratified by nine states. Eventually, all the thirteen states gave it legality, in the following order, by vote of their legislatures: Delaware, Dec. 7, 1787; unanimously. Pennsylvania, Dec. 12, 1787; vote, 46 to 28. New Jersey, Dec. 18, 1787; unanimously. Georgia, Jan. 2, 1788; unanimously. Connecticut, Jan. 9, 1788; vote, 128 to 40. Massachusetts, Feb. 6, 1788; vote, 187 to 168. Maryland, April 28, 1788; vote, 68 to 12.

South Carolina, May 29, 1788, vote, 149 to 73. New Hampshire, June 21, 1788, vote, 57 to 46. Virginia, June 25, 1788, vote, 89 to 79. New York, July 26, 1788, vote, 30 to 28. North Carolina, Nov. 21, 1789, vote, 193 to 75. Rhode Island, May 29, 1790, vote, 34 to 32.

The Constitution in Full. Following is the complete text of the Constitution, as adopted by the Convention and ratified by the states.

ARTICLE I LEGISLATIVE DEPARTMENT

Section 1. Congress in General.

All legislative powers herein granted shall be vested in a Congress of the United States, which shall consist of a Senate and House of Representatives

Section 2. House of Representatives.

1 The House of Representatives shall be composed of members chosen every second year by the people of the several States, and the electors in each State shall have the qualifications requisite for electors of the most numerous branch of the State legislature.

2 No person shall be a Representative who shall not have attained to the age of twenty-five years, and been seven years a citizen of the United States, and who shall not when elected, be an inhabitant of that State in which he shall be chosen.

3. Representatives and direct taxes shall be apportioned among the several states which may be included within this Union, according to their respective numbers, which shall be determined by adding to the whole number of free persons, including those bound to service for a term of years, and excluding Indians not taxed, three-fifths of all other persons. The actual enumeration shall be made within three years after the first meeting of the Congress of the United States, and within every subsequent term of ten years, in such manner as they shall by law direct. The number of Representatives shall not exceed one for every thirty thousand, but each State shall have at least one Representative; and until such enumeration shall be made, the State of New Hampshire shall be entitled to choose three, Massachusetts eight, Rhode Island and Providence Plantations one, Connecticut five, New York six, New Jersey four, Pennsylvania eight, Delaware one, Maryland six, Virginia ten, North Carolina five, South Carolina five, and Georgia three.

4. When vacancies happen in the representation from any State, the executive authority thereof shall issue writs of election to fill such vacancies.

5. The House of Representatives shall choose their Speaker and other officers; and shall have the sole power of impeachment.

Section 3. Senate.

1. The Senate of the United States shall be composed of two Senators from each State, chosen by the legislature thereof, for six

years, and each Senator shall have one vote
 2 Immediately after they shall be assembled in consequence of the first election, they shall be divided as equally as may be into three classes. The seats of the Senators of the first class shall be vacated at the expiration of the second year, of the second class, at the expiration of the fourth year, and of the third class, at the expiration of the sixth year, so that one third may be chosen every second year; and if vacancies happen by resignation, or otherwise, during the recess of the legislature of any State, the executive thereof may make temporary appointments until the next meeting of the legislature, which shall then fill such vacancies.

3 No person shall be a Senator who shall not have attained to the age of thirty years, and been nine years a citizen of the United States, and who shall not, when elected, be an inhabitant of that State for which he shall be chosen.

4 The Vice-President of the United States shall be President of the Senate, but shall have no vote, unless they be equally divided.

5 The Senate shall choose their other officers, and also a President pro tempore, in the absence of the Vice-President, or when he shall exercise the office of President of the United States.

6 The Senate shall have the sole power to try all impeachments. When sitting for that purpose, they shall be on oath or affirmation. When the President of the United States is tried, the Chief Justice shall preside, and no person shall be convicted without the concurrence of two-thirds of the members present.

7. Judgment in cases of impeachment shall not extend further than to removal from office, and disqualification to hold and enjoy any office of honor, trust or profit under the United States, but the party convicted shall nevertheless be liable and subject to indictment, trial, judgment and punishment, according to law.

Section 4. Both Houses.

1 The times, places and manner of holding elections for Senators and Representatives, shall be prescribed in each State by the legislature thereof, but the Congress may at any time by law make or alter such regulations, except as to the places of choosing Senators.

2 The Congress shall assemble at least once in every year, and such meeting shall be on the first Monday in December, unless they shall by law appoint a different day.

Section 5. The Houses Separately.

1 Each house shall be the judge of the elections, returns and qualifications of its own members, and a majority of each shall constitute a quorum to do business; but a smaller number may adjourn from day to day, and may be authorized to compel the attendance of absent members, in such manner, and under such penalties as each house may provide.

2 Each house may determine the rules of its proceedings, punish its members for disorderly behavior, and, with the concurrence of two-thirds, expel a member.

3 Each house shall keep a journal of its proceedings, and from time to time publish the same, excepting such parts as may in their judgment require secrecy, and the yeas and nays of the members of either house on any question shall, at the desire of one-fifth of those present, be entered on the journal.

4 Neither house, during the session of Congress, shall, without the consent of the other, adjourn for more than three days, nor to any other place than that in which the two houses shall be sitting.

Section 6. Privileges and Disabilities of Members.

1. The Senators and Representatives shall receive a compensation for their services, to be ascertained by law, and paid out of the Treasury of the United States. They shall in all cases, except treason, felony and breach of the peace, be privileged from arrest during their attendance at the session of their respective houses, and in going to and returning from the same, and for any speech or debate in either house, they shall not be questioned in any other place.

2 No Senator or Representative shall, during the time for which he was elected, be appointed to any civil office under the authority of the United States, which shall have been created, or the emoluments whereof shall have been increased during such time, and no person holding any office under the United States, shall be a member of either house during his continuance in office.

Section 7. Mode of Passing Laws.

1. All bills for raising revenue shall originate in the House of Representatives, but the Senate may propose or concur with amendments as on other bills.

2 Every bill which shall have passed the House of Representatives and the Senate, shall, before it becomes a law, be presented to the President of the United States, if he approves he shall sign it, but if not he shall return it, with his objections to that house in which it shall have originated, who shall enter the objections at large on their journal, and proceed to reconsider it. If after such reconsideration two-thirds of that house shall agree to pass the bill, it shall be sent, together with the objections, to the other house, by which it shall likewise be reconsidered, and if approved by two-thirds of that house, it shall become a law. But in all such cases the votes of both houses shall be determined by yeas and nays, and the names of the persons voting for and against the bill shall be entered on the journal of each house respectively. If any bill shall not be returned by the President within ten days (Sundays excepted) after it shall have been presented to him, the same shall become a law, in like manner as if he had signed it, unless the Congress by their adjournment prevent its

return, in which case it shall not be a law.

3 Every order, resolution, or vote to which the concurrence of the Senate and House of Representatives may be necessary (except on a question of adjournment) shall be presented to the President of the United States; and before the same shall take effect, shall be approved by him, or being disapproved by him, shall be repassed by two thirds of the Senate and House of Representatives, according to the rules and limitations prescribed in the case of a bill.

Section 8. Powers granted to Congress.

The Congress shall have power:

1. To lay and collect taxes, duties, imposts and excises to pay the debts and provide for the common defense and general welfare of the United States; but all duties, imposts and excises shall be uniform throughout the United States,

2. To borrow money on the credit of the United States,

3. To regulate commerce with foreign nations, and among the several States, and with the Indian tribes,

4. To establish an uniform rule of naturalization, and uniform laws on the subject of bankruptcies throughout the United States,

5. To coin money, regulate the value thereof, and of foreign coin, and fix the standard of weights and measures,

6. To provide for the punishment of counterfeiting the securities and current coin of the United States,

7. To establish post offices and post roads;

8. To promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries;

9. To constitute tribunals inferior to the Supreme Court;

10. To define and punish piracies and felonies committed on the high seas, and offenses against the law of nations,

11. To declare war, grant letters of marque and reprisal, and make rules concerning captures on land and water,

12. To raise and support armies, but no appropriation of money to that use shall be for a longer term than two years;

13. To provide and maintain a navy;

14. To make rules for the government and regulation of the land and naval forces;

15. To provide for calling forth the militia to execute the laws of the Union, suppress insurrection and repel invasions;

16. To provide for organizing, arming, and disciplining, the militia, and for governing such part of them as may be employed in the service of the United States, reserving to the States respectively, the appointment of the officers, and the authority of training the militia according to the discipline prescribed by Congress;

17. To exercise exclusive legislation in all cases whatsoever, over such district (not exceeding ten miles square) as may, by cession of particular States, and the acceptance of Congress, become the seat of the Government

of the United States, and to exercise like authority over all places purchased by the consent of the legislature of the State in which the same shall be, for the erection of forts, magazines arsenals, dockyards, and other needful buildings, and

18. To make all laws which shall be necessary and proper for carrying into execution the foregoing powers, and all other powers vested by this Constitution in the Government of the United States, or in any department or officer thereof

Section 9. Powers denied to the United States.

1. The migration or importation of such persons as any of the States now existing shall think proper to admit, shall not be prohibited by the Congress prior to the year one thousand eight hundred and eight, but a tax or duty may be imposed on such importation, not exceeding ten dollars for each person.

2. The privilege of the writ of habeas corpus shall not be suspended, unless when in cases of rebellion or invasion the public safety may require it.

3. No bill of attainder or ex post facto law shall be passed

4. No capitation, or other direct tax shall be laid, unless in proportion to the census or enumeration herein before directed to be taken.

5. No tax or duty shall be laid on articles exported from any State.

6. No preference shall be given by any regulation of commerce or revenue to the ports of one State over those of another, nor shall vessels bound to, or from, one State, be obliged to enter, clear, or pay duties in another.

7. No money shall be drawn from the Treasury, but in consequence of appropriations made by law, and a regular statement and account of the receipts and expenditures of all public money shall be published from time to time.

8. No title of nobility shall be granted by the United States, and no person holding any office of profit or trust under them, shall, without the consent of the Congress, accept of any present, emolument, office, or title, of any kind whatever, from any king, prince, or foreign State.

Section 10. Powers denied to the States.

1. No State shall enter into any treaty, alliance, or confederation, grant letters of marque and reprisal; coin money, emit bills of credit; make anything but gold and silver coin a tender in payment of debts, pass any bill of attainder, ex post facto law, or law impairing the obligation of contracts, or grant any title of nobility

2. No State shall, without the consent of the Congress, lay any imposts or duties on imports or exports, except what may be absolutely necessary for executing its inspection laws, and the net produce of all duties and imposts, laid by any State on imports or exports, shall be for the use of the Treasury

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of the United States, and all such laws shall be subject to the revision and control of the Congress.

3 No State shall, without the consent of Congress, lay any duty of tonnage, keep troops or ships of war in time of peace, enter into any agreement or compact with another State, or with a foreign power, or engage in war, unless actually invaded, or in such imminent danger is will not admit of delay.

ARTICLE II. EXECUTIVE DEPARTMENT

Section 1. President and Vice-President.

1 The executive power shall be vested in a President of the United States of America. He shall hold his office during the term of four years, and, together with the Vice-President, chosen for the same term, be elected as follows:

2 Each State shall appoint, in such manner as the legislature thereof may direct, a number of electors equal to the whole number of Senators and Representatives to which the State may be entitled in the Congress, but no Senator or Representative or person holding an office of trust or profit under the United States shall be appointed an elector.

3 (The electors shall meet in their respective States and vote by ballot for two persons, of whom one at least shall not be an inhabitant of the same State with themselves. And they shall make a list of all the persons voted for, and of the number of votes for each, which list they shall sign and certify, and transmit sealed to the seat of Government of the United States, directed to the President of the Senate. The President of the Senate shall, in the presence of the Senate and House of Representatives, open all the certificates, and the votes shall then be counted. The person having the greatest number of votes shall be the President, if such number be a majority of the whole number of electors appointed; and if there be more than one who have such majority, and have an equal number of votes, then the House of Representatives shall immediately choose by ballot one of them for President; and if no person have a majority, then from the five highest on the list the said House shall in like manner choose the President. But in choosing the President, the votes shall be taken by States, the representation from each State having one vote, a quorum for this purpose shall consist of a member or members from two-thirds of the States, and a majority of all the States shall be necessary to a choice. In every case, after the choice of the President, the person having the greatest number of votes of the electors shall be the Vice-President. But if there should remain two or more who have equal votes, the Senate shall choose from them by ballot the Vice-President. [Superseded by Amendment XII])

4 The Congress may determine the time of choosing the electors, and the day on which they shall give their votes; which day shall be the same throughout the United States.

5 No person except a natural born citizen, or a citizen of the United States, at the time

of the adoption of this Constitution, shall be eligible to the office of President, neither shall any person be eligible to that office who shall not have attained to the age of thirty-five years, and been fourteen years a resident within the United States.

6 In case of the removal of the President from office, or of his death, resignation, or inability to discharge the powers and duties of the said office, the same shall devolve on the Vice-President, and the Congress may by law provide for the case of removal, death, resignation or inability, both of the President and Vice-President, declaring what officer shall then act as President, and such officer shall act accordingly until the disability be removed, or a President shall be elected.

7 The President shall, at stated times, receive for his services a compensation, which shall neither be increased nor diminished during the period for which he shall have been elected, and he shall not receive within that period any other emolument from the United States, or any of them.

8 Before he enter on the execution of his office, he shall take the following oath or affirmation:

"I do solemnly swear (or affirm) that I will faithfully execute the office of President of the United States, and will to the best of my ability preserve, protect and defend the Constitution of the United States."

Section 2. Powers of the President.

1 The President shall be Commander in Chief of the army and navy of the United States, and of the militia of the several States, when called into the actual service of the United States, he may require the opinion, in writing, of the principal officer in each of the executive departments, upon any subject relating to the duties of their respective offices, and he shall have power to grant reprieves and pardons for offenses against the United States, except in cases of impeachment.

2 He shall have power, by and with the advice and consent of the Senate, to make treaties, provided two-thirds of the Senators present concur, and he shall nominate, and by and with the advice and consent of the Senate, shall appoint ambassadors, other public ministers and consuls, judges of the Supreme Court, and all other officers of the United States, whose appointments are not herein otherwise provided for, and which shall be established by law, but the Congress may by law vest the appointment of such inferior officers, as they think proper, in the President alone, in the courts of law, or in the heads of departments.

3 The President shall have power to fill up all vacancies that may happen during the recess of the Senate, by granting commissions which shall expire at the end of their next session.

Section 3. Duties of the President.

He shall from time to time give to the Congress information of the state of the Union, and recommend to their consideration such measures as he shall judge necessary and

expedient; he may, on extraordinary occasions, convene both houses, or either of them, and in case of disagreement between them, with respect to the time of adjournment, he may adjourn them to such time as he shall think proper, he shall receive ambassadors and other public ministers, he shall take care that the laws be faithfully executed, and shall commission all the officers of the United States.

Section 4. Impeachment.

The President, Vice-President, and all civil officers of the United States, shall be removed from office on impeachment for, and conviction of, treason, bribery, or other high crimes and misdemeanors.

ARTICLE III JUDICIAL DEPARTMENT.

Section 1. United States Courts.

The judicial power of the United States, shall be vested in one Supreme Court, and in such inferior courts as the Congress may from time to time ordain and establish. The judges, both of the supreme and inferior courts, shall hold their offices during good behavior, and shall, at stated times, receive for their services, a compensation, which shall not be diminished during their continuance in office.

Section 2. Jurisdiction of the United States Courts.

1. The judicial power shall extend to all cases, in law and equity, arising under this Constitution, the laws of the United States, and treaties made, or which shall be made, under their authority, to all cases affecting ambassadors, other public ministers and consuls, to all cases of admiralty and maritime jurisdiction, to controversies to which the United States shall be a party, to controversies between two or more States, between a State and citizens of another State, between citizens of different States, between citizens of the same State claiming lands under grants of different States, and between a State, or the citizens thereof, and foreign States, citizens or subjects.

2. In all cases affecting ambassadors, other public ministers and consuls, and those in which a State shall be a party, the Supreme Court shall have original jurisdiction. In all the other cases before mentioned the Supreme Court shall have appellate jurisdiction, both as to law and fact, with such exceptions, and under such regulations as the Congress shall make.

3. The trial of all crimes, except in cases of impeachment, shall be by jury, and such trial shall be held in the State where the said crime shall have been committed, but when not committed within any State, the trial shall be at such place or places as the Congress may by law have directed.

Section 3. Treason.

1. Treason against the United States, shall consist only in levying war against them, or in adhering to their enemies, giving them aid

and comfort. No person shall be convicted of treason unless on the testimony of two witnesses to the same overt act, or on confession in open court.

2. The Congress shall have power to declare the punishment of treason, but no attainer of treason shall work corruption of blood, or forfeiture except during the life of the person attainted.

ARTICLE IV THE STATES AND THE FEDERAL GOVERNMENT

Section 1. State Records.

Full faith and credit shall be given in each State to the public acts, records, and judicial proceedings of every other State. And the Congress may by general laws prescribe the manner in which such acts, records and proceedings shall be proved, and the effect thereof.

Section 2. Privileges of Citizens, Etc.

1. The citizens of each State shall be entitled to all privileges and immunities of citizens in the several States.

2. A person charged in any State with treason, felony, or other crime, who shall flee from justice, and be found in another State, shall, on demand of the executive authority of the State from which he fled, be delivered up, to be removed to the State having jurisdiction of the crime.

3. No person held to service or labor in one State, under the laws thereof, escaping into another, shall, in consequence of any law or regulation therein, be discharged from such service or labor, but shall be delivered up on claim of the party to whom such service or labor may be due.

Section 3. New States and Territories.

1. New States may be admitted by the Congress into this Union, but no new State shall be formed or erected within the jurisdiction of any other State, nor any State be formed by the junction of two or more States, or parts of States, without the consent of the legislatures of the States concerned as well as of the Congress.

2. The Congress shall have power to dispose of and make all needful rules and regulations respecting the territory or other property belonging to the United States, and nothing in this Constitution shall be so construed as to prejudice any claims of the United States, or of any particular State.

Section 4. Guarantee to the States.

The United States shall guarantee to every State in this Union a republican form of government, and shall protect each of them against invasion, and on application of the legislature, or of the executive (when the legislature cannot be convened) against domestic violence.

ARTICLE V. POWER OF AMENDMENT.

The Congress, whenever two-thirds of both houses shall deem it necessary, shall propose amendments to this Constitution, or, on the

application of the legislatures of two-thirds of the several States, shall call a convention for proposing amendments, which, in either case, shall be valid to all intents and purposes, as part of this Constitution, when ratified by the legislatures of three-fourths of the several States, or by conventions in three-fourths thereof, as the one or the other mode of ratification may be proposed by the Congress, provided that no amendment which may be made prior to the year one thousand eight hundred and eight shall in any manner affect the first and fourth clauses in the ninth section of the first article; and that no State, without its consent, shall be deprived of its equal suffrage in the Senate.

ARTICLE VI.

1. All debts contracted and engagements entered into, before the adoption of this Constitution, shall be valid against the United States under it as Constitution as under the Confederation.

2. This Constitution, and the laws of the United States which shall be made in pursuance thereof, and all treaties made, or which shall be made under the authority of the United States, shall be the supreme law of the land; and the judges in every State shall be bound thereby, anything in the Constitution or laws of any State to the contrary notwithstanding.

3. The Senators and Representatives before mentioned, and the members of the several State legislatures, and all executive and judicial officers both of the United States and of the several States, shall be bound by oath or affirmation, to support this Constitution, but no religious test shall ever be required as a qualification to any office or public trust under the United States.

ARTICLE VII. RATIFICATION OF THE CONSTITUTION.

The ratification of the convention of nine States, shall be sufficient for the establishment of this Constitution between the States so ratifying the same.

The Twenty-one Amendments. The greatest objection to prompt ratification of the Constitution as adopted by the Convention was that in no part of the document was there a guarantee of certain inalienable rights of the people. It was only on the express understanding that the first Congress to meet should propose amendments covering these demands that several of the states ratified the Constitution. The first ten Amendments were accordingly proposed in 1789 and declared adopted in 1791. The Eleventh and Twelfth Amendments may be practically considered as adopted for the same reasons which compelled the adoption of the first ten. The Eleventh was proposed in 1791, the Twelfth in 1803; they were declared

adopted in 1798 and 1804, respectively. The next three were the outgrowth of the Civil War. The Thirteenth was adopted in 1865; the Fourteenth, proposed in 1866, was adopted in 1868, the Fifteenth was adopted in 1870. The Sixteenth and Seventeenth were adopted in 1913, the Eighteenth in 1919, effective in 1920, the Nineteenth in 1920, and the Twentieth and Twenty-first in 1933. The full text of the Amendments follows:

ARTICLE I.

Congress shall make no law respecting an establishment of religion, or prohibiting the free exercise thereof, or abridging the freedom of speech, or of the press, or the right of the people peaceably to assemble, and to petition the government for a redress of grievances.

ARTICLE II.

A well-regulated militia, being necessary to the security of a free state, the right of the people to keep and bear arms, shall not be infringed.

ARTICLE III.

No soldier shall, in time of peace, be quartered in any house, without the consent of the owner, nor in time of war, but in a manner to be prescribed by law.

ARTICLE IV.

The right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures, shall not be violated, and no warrants shall issue, but upon probable cause, supported by oath or affirmation, and particularly describing the place to be searched, and the person or things to be seized.

ARTICLE V.

No person shall be held to answer for a capital, or otherwise infamous crime, unless on a presentment or indictment of a grand jury, except in cases arising in the land or naval forces, or in the militia, when in actual service in time of war or public danger, nor shall any person be subject for the same offense to be twice put in jeopardy of life or limb, nor shall he be compelled in any criminal case to be a witness against himself, nor be deprived of life, liberty, or property, without due process of law, nor shall private property be taken for public use without just compensation.

ARTICLE VI.

In all criminal prosecutions the accused shall enjoy the right to a speedy and public trial, by an impartial jury of the state and district wherein the crime shall have been committed, which district shall have been previously ascertained by law, and to be informed of the nature and cause of the accusation; to be confronted with the witnesses against him; to have compulsory process for obtaining witnesses in his favor, and to have the assistance of counsel for his defense.

ARTICLE VII.

In suits at common law, where the value in controversy shall exceed twenty dollars, the right of trial by jury shall be preserved, and no fact tried by a jury, shall be otherwise re-examined in any court of the United States, than according to the rules of the common law.

ARTICLE VIII.

Excessive bail shall not be required, nor excessive fines imposed, nor cruel and unusual punishments inflicted.

ARTICLE IX.

The enumeration in the Constitution, of certain rights, shall not be construed to deny or disparage others retained by the people.

ARTICLE X.

The powers not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States respectively, or to the people.

ARTICLE XI.

The judicial power of the United States shall not be construed to extend to any suit in law or equity, commenced or prosecuted against one of the United States by citizens of another State, or by citizens or subjects of any foreign State.

ARTICLE XII.

1. The electors shall meet in their respective States, and vote by ballot for President and Vice-President, one of whom, at least, shall not be an inhabitant of the same State with themselves, they shall name in their ballots the person voted for as President, and in distinct ballots the person voted for as Vice-President, and they shall make distinct lists of all persons voted for as President, and of all persons voted for as Vice-President, and of the number of votes for each, which lists they shall sign and certify, and transmit sealed to the seat of the government of the United States, directed to the President of the Senate; the President of the Senate shall, in the presence of the Senate and House of Representatives, open all the certificates and the votes shall then be counted, the person having the greatest number of votes for President, shall be the President, if such number be a majority of the whole number of electors appointed; and if no person have such majority, then from the persons having the highest numbers not exceeding three on the list of those voted for as President, the House of Representatives shall choose immediately, by ballot, the President. But in choosing the President the votes shall be taken by States, the representation from each State having one vote; a quorum for this purpose shall consist of a member or members from two-thirds of the States, and a majority of all the States shall be necessary to a choice. And if the House of Representatives shall not choose a President whenever the right of choice shall devolve upon them, before the fourth day of

March next following, then the Vice-President shall act as President, as in the case of the death or other constitutional disability of the President.

2. The person having the greatest number of votes as Vice-President, shall be the Vice-President, if such number be a majority of the whole number of electors appointed, and if no person have a majority, then from the two highest numbers on the list, the Senate shall choose the Vice-President, a quorum for the purpose shall consist of two-thirds of the whole number of Senators, and a majority of the whole number shall be necessary to a choice.

3. But no person constitutionally ineligible to the office of President shall be eligible to that of Vice-President of the United States.

ARTICLE XIII.

1. Neither slavery nor involuntary servitude, except as a punishment for crime whereof the party shall have been duly convicted, shall exist within the United States, or any place subject to their jurisdiction.

2. Congress shall have authority to enforce this article by appropriate legislation.

ARTICLE XIV.

1. All persons born or naturalised in the United States, and subject to the jurisdiction thereof, are citizens of the United States and of the State wherein they reside. No State shall make or enforce any law which shall abridge the privileges or immunities of citizens of the United States, nor shall any State deprive any person of life, liberty, or property, without due process of law, nor deny to any person within its jurisdiction the equal protection of the laws.

2. Representatives shall be apportioned among the several States according to their respective numbers, counting the whole number of persons in each State, excluding Indians not taxed. But when the right to vote at any election for the choice of electors for President and Vice-President of the United States, Representatives in Congress, the executive and judicial officers of a State, or the members of the legislature thereof, is denied to any of the male inhabitants of such State, being twenty-one years of age, and citizens of the United States, or in any way abridged, except for participation in rebellion or other crime, the basis of representation therein shall be reduced in the proportion which the number of such male citizens shall bear to the whole number of male citizens twenty-one years of age in such State.

3. No person shall be a Senator or Representative in Congress, or elector of President and Vice-President, or hold any office, civil or military, under the United States, or under any State, who having previously taken an oath, as a member of Congress, or as an officer of the United States, or as a member of any State legislature, or as an executive or judicial officer of any State, to support the Constitution of the United States, shall have engaged in insurrection or rebellion against

the same, or given aid or comfort to the enemies thereof. But Congress may, by a vote of two-thirds of each house, remove such disability.

4 The validity of the public debt of the United States, authorized by law, including debts incurred for payment of pensions and bounties for services in suppressing insurrection or rebellion, shall not be questioned. But neither the United States nor any State shall assume or pay any debt or obligation incurred in aid of insurrection or rebellion against the United States, or any claim for the loss or emancipation of any slave, but all such debts, obligations, and claims shall be held illegal and void.

5 The Congress shall have power to enforce, by appropriate legislation, the provisions of this article.

ARTICLE XV

1. The right of citizens of the United States to vote shall not be denied or abridged by the United States or by any State on account of race, color, or previous condition of servitude.

2. The Congress shall have power to enforce this article by appropriate legislation.

ARTICLE XVI

The Congress shall have power to lay and collect taxes on incomes from whatever source derived, without apportionment among the several states, and without regard to any census or enumeration.

ARTICLE XVII

1. The Senate of the United States shall be composed of two Senators from each state, elected by the people thereof, for six years, and each Senator shall have one vote. The electors in each state shall have the qualifications requisite for electors of the most numerous branches of the state legislatures.

2. When vacancies happen in the representation of any state in the Senate, the executive authority of such state shall issue writs of election to fill such vacancies. Provided, That the legislature of any state may empower the executive thereof to make temporary appointment until the people fill the vacancies by election as the legislature may direct.

3. This amendment shall not be so construed as to affect the election or term of any Senator chosen before it becomes valid as part of the Constitution.

ARTICLE XVIII

1. After one year from the ratification of this article the manufacture, sale or transportation of intoxicating liquors within, the importation thereof into, or the exportation thereof from the United States and all territory subject to the jurisdiction thereof for beverage purposes is hereby prohibited.

2. The Congress and the several states shall have concurrent power to enforce this article by appropriate legislation.

3. This article shall be inoperative unless it shall have been ratified as an amendment to the constitution by the legislatures of the

several states, as provided in the constitution, within seven years from the date of the submission thereof to the states by the Congress.

ARTICLE XIX.

The right of citizens of the United States to vote shall not be abridged by the United States or by any state on account of sex.

Congress shall have power to enforce this article by appropriate legislation.

ARTICLE XX.

1. The terms of the President and Vice President shall end at noon on the 20th day of January, and the terms of Senators and Representatives at noon on the 3rd day of January, of the years in which such terms would have ended if this article had not been ratified, and the terms of their successors shall then begin.

2. The Congress shall assemble at least once in every year, and such meeting shall begin at noon on the 3rd day of January unless they shall by law appoint a different day.

3. If, at the time fixed for the beginning of the term of the President, the President-elect shall have died, the Vice President-elect shall become President. If a President shall not have been chosen before the time fixed for the beginning of his term or if the President-elect shall have failed to qualify, then the Vice President-elect shall act as President until a President shall have qualified, and the Congress may by law provide for the case wherein neither a President-elect nor a Vice President-elect shall have qualified, declaring who shall then act as President, or the manner in which one who is to act shall be selected, and such person shall act accordingly until a President or Vice President shall have qualified.

4. The Congress may by law provide for the case of the death of any of the persons from whom the House of Representatives may choose a President whenever the right of choice shall have devolved upon them, and for the case of the death of any of the persons from whom the Senate may choose a Vice President whenever the right of choice shall have devolved upon them.

5. Sections 1 and 2 shall take effect on the 13th day of October following the ratification of this article.

6. This article shall be inoperative unless it shall have been ratified as an amendment to the Constitution by the Legislatures of three-fourths of the several States within seven years from the date of its submission.

ARTICLE XXI

1. The 18th article of amendment to the Constitution of the United States is hereby repealed.

2. The transportation or importation into any State, Territory, or possession of the United States for delivery or use therein of intoxicating liquors, in violation of the laws thereof, is hereby prohibited.

3. This article shall be inoperative unless it shall have been ratified as an amendment to the Constitution by conventions in the several States, as provided in the Constitution, within seven years from the date of the submission thereof, to the States by the Congress.

CONSUL, *kon'sul*, an official appointed by the government of one country to attend to its commercial interests in a city of another country. The duties of a consul are to promote trade; to give advice and assistance, when called upon, to his fellow citizens temporarily there; to uphold their lawful interests and privileges; to transmit reports of trade, industry and navigation to his government; to authenticate certain documents.

Roman Consuls. These were the two highest magistrates in the Republic of Rome. They were annually elected, at first only from the patricians, at a later period also from the plebeians. The consul was required to be at least forty-five years of age and must have passed through certain inferior offices. At first, the consuls could declare war, conclude peace, make alliances and even order a citizen to be put to death. Their powers were gradually curtailed, and under the emperors the consular dignity rapidly declined and became merely honorary.

CONSUMPTION. See *TUBERCULOSIS*.

CONSUMPTION, in political economy, is the use of products to satisfy human needs. The use of machinery to manufacture clothing and the wearing of the clothing by the purchasers are both forms of consumption, and each illustrates a different kind of consumption. The employment of machinery to make clothing is an example of *productive* consumption, for the result is production; the wearing out of the clothing, on the other hand, is *final* consumption. The eating of food is another example of final consumption, and it differs from the destruction of food in that a human need is satisfied. Consumption and destruction are therefore not equivalent. The same comparison may be drawn between the burning of wood for fuel and the destruction of trees in a forest fire. Economists also distinguish between useful and harmful consumption. The careless use of a scarce product in wartime is an example of the latter.

CONTAGIOUS, *kon ta'jus*, **DISEASES** are diseases which one may acquire by touching people afflicted with them, or objects contaminated by the patients, or secretions of the patients. Nearly all contagious diseases are

germ disorders, or infections. There are some infections, however, which are not acquired by direct contact, and it is thus correct to say that an infectious disease may or may not be contagious. Smallpox, diphtheria, measles, scarlet fever, chicken pox, whooping cough and mumps are typical contagious diseases. The control of epidemics of these diseases has made great progress in recent years as sanitary science has advanced. See *SANITARY SCIENCES*.

CONTEMPT', an offense against the dignity, order or authority of a court or legislative assembly, usually consisting in failure to obey its specific commands, or in insults. Penalties vary from small fines to brief jail sentences.

CONTINENTAL SYSTEM, a plan devised by Napoleon during the Napoleonic wars with England to exclude Great Britain from all intercourse with the continent of Europe. It began with the Berlin Decree of November 21, 1806, by which the British Islands were declared to be in a state of blockade; all commerce, intercourse and correspondence were prohibited; every Englishman found in France, or in a country occupied by French troops, was declared a prisoner of war, all property belonging to the English was declared fair prize, and all trade in goods from Britain or British colonies was entirely prohibited.

Great Britain replied by Orders in Council, prohibiting trade with French ports and declaring all harbors of France and its allies subjected to the same restrictions as if they were closely blockaded. Further decrees on the part of France, of a still more stringent kind, denationalized all vessels of whatever flag, which had been searched by a British vessel or which had paid duty to Britain, and directed the burning of all captured British goods. These decrees caused extreme indignation and great annoyance, and gave rise to much smuggling, till the fall of Napoleon in 1814. The insistence of England on her Orders in Council was one cause of the War of 1812 with the United States (see *WAR OF 1812*).

CONTRABAND OF WAR. Contraband means *prohibited traffic*, or *that which is forbidden*. Contraband of war includes goods which a nation at war knows will be useful to its enemy. Such goods, found on the high seas, are subject to seizure by the enemy. They always include munitions of

war, such as arms and explosives, also uniforms, food destined for soldiers, and any machinery intended in any degree to aid in prosecuting the war. All such goods, directly used in war, are called *absolute contraband*. Another class of merchandise, intended for non-combatants, such as all kinds of food-stuffs, clothing, etc., may be declared *occasional contraband*, by proclamation of any belligerent (see **BELLIGERENT**).

A nation at war always issues a proclamation stating what goods it declares to be contraband. Neutral vessels carry contraband goods and deal with either or both belligerents at their own risk. Captured goods may be paid for by the captor nation or they may be sold to its citizens; but not always are the owners reimbursed with the proceeds. See **WORLD WAR**.

CONTRACT, in law, an agreement between two or more persons in which each party binds himself to do or forbear some act, and each acquires a right to what the other promises. Contracts may be in expressed terms or may be implied from the acts of the parties; they may be verbal or written, and at common law both forms are binding, but usually under statute law the promise must be in writing. The law of contract occupies by far the larger place in the commercial law of all nations, and there is general harmony in the principles by which it is governed.

Certain classes of persons are under peculiar disabilities as to the making of contracts:

(1) In common law, contracts made by an infant (a person under twenty-one years) are voidable unless they are in some way for his special benefit or, in particular, for the necessities of life.

(2) A married woman, in jurisdictions where the law merges her in her husband, cannot bind herself by contract.

(3) Contracts made by a lunatic are void. The same principle is extended to drunkards.

(4) A corporation can make binding contracts only for things or acts connected with the business for which it was especially created and chartered, excepting in cases of "convenience almost amounting to necessity" (see **Corporation**).

(5) Contracts between citizens of two countries at war are illegal and void.

The making of a contract comprises two acts: first, an offer; second, an acceptance. The offer may be either in oral or written words, or by action which a reasonable person would interpret as meaning a certain

definite thing. The acceptance may be either by word or by action. It must be given directly to the offerer or addressed to him and delivered to the usual carriers of communication, such as the mail or telegraph. It constitutes an assent, and the bargain is closed, if it is delivered to the carrier within a time during which it is previously agreed the offer remains open.

Every contract must be founded on a *consideration*, either of money or of some act whereby an advantage accrues to one or both parties. Thus, the promise of a gift for no compensation whatever cannot be enforced at law. However, the law considers such a consideration as love and affection between near relatives a good consideration in certain cases. Certain considerations are held to be insufficient or illegal; among others, the promise to do an unlawful or impossible act is not binding. A contract obtained by fraud, mistake or compulsion cannot be enforced.

Contracts upon certain subjects, or between certain classes of parties, must be *sealed*, that is, signed and sealed by the contracting parties (see **SEAL**). Certain others, known as *parole contracts*, must be reduced to writing in order to be enforced. Among these are the sale of real estate, contracts to be performed more than one year in the future, the guarantee to pay another man's debt, agreements to confer property on marriage and, in some states, the sale of goods valued at more than a certain amount.

Contracts are void when their subject matter is illegal. Such are contracts forbidden by statute (for instance, betting and gambling); those forbidden by common law (for instance, contracts to commit crime); contracts contrary to public policy (for instance, in restraint of trade; in restraint of marriage; those which pervert the acts of government, such as bribery; those which obstruct the course of justice, and those which are immoral). Certain other contracts are voidable, that is, can be set aside, though not necessarily illegal (for instance, those obtained by mistake, fraud, misrepresentation or compulsion).

CONTRACT LABOR LAW, a statute of the United States relating to the importation of persons from foreign countries who come to the American nation under contract to perform certain labor. The first law of the kind was passed in 1885, and prohibited

the importation only of unskilled contract labor. A new law enacted in 1903 included both skilled and unskilled contract labor. Since then restrictions have been modified in favor of aliens who wish to enter the United States temporarily in pursuit of one of the arts or a profession. The law assumes that other persons might reach America under contract to perform a certain piece of work and while here would deprive American citizens of deserved opportunity in like fields, and thus add to unemployment problems.

CONVICT LABOR, the system in force in penitentiaries, of employing prisoners in productive enterprises, in order to keep them from idleness and to make them earn their keeping. Several general plans are in operation in the United States. In the *lease system* the convicts are leased to contractors, who thereupon assume entire responsibility for their care and safe-keeping. The *contract system* is used in two different forms: In one the state furnishes the material and tools, the work being supervised by the contractor; in the other, the *piece-price system*, the contractor furnishes the tools and material, the work is supervised by state officials and the finished product is bought at a fixed price by the contractor. The chief advantages of this plan are that the state avoids risk of loss in selling the products, is not compelled to make investment and furnishes steady employment to its prisoners. The objections, however, are many. It often interferes with prison discipline, it gives the contractor an unfair advantage over his competitors, and it probably tends to reduce wages in the lines in which it is used.

The *public account system* is gaining ground. All materials and equipment are provided by the state; the work is also supervised by the state officials, and the state either uses or sells the product. The *state-use system* is similar to the above, but the products are used exclusively by the state. Finally, there is the *public works and ways system*, whereby convict labor is used in public construction, as road making. The public-account, state-use and public-works systems are in most general use in America.

CONVOLVULUS, *kon vol'vu lus*, a genus of slender, twining herbs with milky juice, bearing bell-shaped flowers. Some species are common weeds; others are cultivated in gardens for their beauty, and still others have strong medicinal properties. This genus

gives the name to a large family of plants, many of which are of great interest.

Related Articles. Among the members of this group are the following.

Bindweed	Morning-Glory
Dodder	Scammony
Jalap	Sweet Potato

CONVULSION, *kon vu'l'shun*, a contortion of the muscles, also called *spasm*. Convulsions manifest themselves in many forms, they are not a disease, but are a symptom of disease. Violent twitches of the muscles and frothing at the mouth are characteristic features of epilepsy (which see), and facial jerkings accompany Saint Vitus's dance. Then there are the familiar spasms of infants, which often result from indigestion. Many cases of pneumonia, measles and scarlet fever in babies start with spasms. Dr. L. E. Holt advised the following treatment for infantile attacks of convulsions.

Keep the child perfectly quiet with ice at the head, put the feet in a mustard bath, and roll the entire body in large towels which have been dipped in mustard water, and have plenty of hot water and a bathtub at hand, so that the doctor can give a hot bath if he thinks it advisable.

If the convulsions continue until the pulse is weak, the face very pale, the nails and lips blue, and the feet and hands cold, the hot bath will bring blood to the surface and relieve the heart, lungs and brain.

The temperature should not be over 105° F.; this should be tested by a thermometer if one can be obtained. Without this precaution, in the excitement of the moment, infants have frequently been put into baths so hot that serious and even fatal burns have been produced. If no thermometer is available the nurse may plunge her arm to the elbow into the water. It should feel warm, but not uncomfortable. One-half a teacupful of powdered mustard added to the bath often adds to its efficacy.

CONWAY CABAL, *ka'bal'*, a conspiracy organized among a group of officers in the American colonial army in 1777, whose chief object was the promotion of its members, especially of General Horatio Gates to supreme command of the Continental Army. The conspiracy took its name from its most active member, Thomas Conway, and included many prominent men, among them General Charles Lee. Other more sturdy patriots, as John and Samuel Adams, though not intimately associated with the cabal, were not averse to its purposes. It accomplished much evil during its short life, but it was finally crushed, when its dishonest methods and its unpatriotic purposes were exposed.

COOLIDGE, CALVIN (1872-1933), lawyer, statesman, thirtieth President of the United States. He was born at Plymouth, Vt., on July 4, 1872, with ancestry that goes back to the origins of New England. There he imbibed those notions of liberty under law, those habits of industry and serious thought, that developed into the man of character, of purpose,—the public administrator. He attended the village school, later Black River Academy at Ludlow, and St. Johnsbury Academy, and at 17 entered Amherst College, from which he was graduated *cum laude* in 1895. He showed in this period a great interest in political history. In his senior year at Amherst he won a competition open to students of all colleges for an essay on "The Principles for Which the Revolution Was Fought."

The same year he went to Northampton, Mass., where he studied law, and earned the right to practice in 1897. In 1905 he married Miss Grace A. Goodhue, of Burlington, Vt., and they established their home in Northampton. While the practice of law brought him some success, his real interest was in the political field. At a later time he said in a public address: "Politics is not an end, but a means. It is not a product, but a process. It is the art of government. Like other values, it has its counterfeits . . . It is the process of action in public affairs."

His Rise to the Presidency. Coolidge's rise to the higher places in State and National politics was a gradual process, step by step. In 1899 he was elected to the city council, and he filled in succession the offices of city attorney, and clerk of court. He was state representative, then mayor of the city, and in 1912 was elected to the Massachusetts Senate. Here he served for four years, the last two as its President. Then for two years he was Lieutenant-Governor, and for the next two years (1919-1920), Governor of Massachusetts. The Republican National Convention nominated him for the vice-presidency in 1920, and he was elected to that office, succeeding to the Presidency, in August 1923, on the death of President Harding, and was elected in 1924 to continue in that high office.

His Career in Massachusetts. In the several positions which he held in his home state, Coolidge mastered the problems of each as he went along, and there is evidence that the problems of the nation received much

of his attention and study. In the State Senate his work attracted wide attention; he was recognized as one of the best informed minds on public questions of the day. As Governor he had to face some difficult situations. The one which focussed the eyes of the Nation on Massachusetts was the strike of the Boston police in September, 1919. The Boston police are a part of the state organization and act under its authority, hence the situation was one for the State officials to handle. Governor Coolidge's condemnation of the strike was heralded to all parts of the country and made him a national figure. One sentence in his message to a union leader was "There is no right to strike against the public safety by anybody, anywhere, anytime." Other situations calling for executive action brought statements or vetoes which displayed both Coolidge's independent courage, and the fundamental soundness of his political philosophy.

The 1920 Convention. The Republican National Convention, in June, 1920, had several candidates for the nomination for the presidency who were outstanding figures in the nation, men of highest character and attainments, who had performed important services, and deserved high consideration on their records. Warren G. Harding won the nomination for the presidency on the tenth ballot, and Calvin Coolidge was unanimously nominated for the vice-presidency. There is no doubt that Coolidge's nomination was due to the conviction of his real presidential qualities. The Harding and Coolidge ticket won by a large majority in the November election. Under our system of government the Vice-President has no administrative responsibilities. But President Harding instituted the practice of requesting the Vice-President to attend the Cabinet meetings. This proved a most fortunate plan, for it enabled Coolidge to get a clear understanding of the public questions under discussion, and the attitude of the administration on them.

Accession to the Presidency. The death of President Harding, August 2, 1923, came with dramatic suddenness, and mingled with the grief of the nation was a national anxiety as to the capacity of Calvin Coolidge to measure up to the responsibilities of the presidency. In the quiet of his boyhood home, and in the presence of his father, a notary public, he took the oath of office. The habitual reticence which marked Coolidge's inter-

course with other men, his habit of keeping his own counsel, served to focus the attention and interest of the country on his infrequent public addresses. President Harding's Cabinet was retained without change, and the announcement was made that the policies of the Harding Administration would be continued. Confidence in the President grew steadily, as he declared himself on public questions as they arose.

His First Message to Congress. In his first message to Congress, Coolidge gave the keynote to his administration. He not only gave to Congress and the country the fundamentals of his political philosophy, but made definite recommendations with courage and sound argument. He followed President Harding in advocacy of American membership in the world court. The proposed soldiers' bonus he did not favor, but he strongly urged on Congress the duty of giving adequate care to the veteran soldiers, to give hospital relief and compensation to those who had suffered disabilities, and to their dependents, and to provide rehabilitation and vocational training.

He recommended Secretary Mellon's plan for tax reduction aided by budget retrenchment, cut in charges on earned incomes and surtaxes, and abolition of nuisance taxes. He urged a constitutional amendment to abolish tax exempt securities. He opposed the cancellation of foreign debts, but advocated generosity in terms of settlement. The recognition of the Russian government was opposed, but aid to the Russian people was urged. He favored railroad legislation, for purpose of insuring fair rates and just returns. The proposed plan to aid farmers by fixing export price of wheat was opposed; he asserted that permanent help must come from their own initiative and cooperation. He insisted on dry law enforcement, advocated inland waterways, asked for a strong army and navy, favored restricted immigration with selection at the source.

Legislation—68th Congress. A new tax law was passed in 1924, but it differed considerably from the Mellon plan; it did however give much relief to the taxpayers. A soldiers' bonus bill was passed, but vetoed on the ground that it would add too greatly to the tax burden; Congress passed the bill over his veto. A bill to increase the pay of postal employees, whose salaries were admitted to be too low, was vetoed, because Con-

gress made no provision to provide the necessary funds.

Inherited Embarrassments. Disclosures connected with the leasing of the Teapot Dome oil fields during Harding's administration did not involve President Coolidge personally, but members of the Cabinet who had remained with him were involved. The Department of Justice was attacked; Attorney-General Daugherty was forced from the Cabinet, Secretary of the Navy Denby resigned, and ex-Secretary of the Interior Fall, held to be the most responsible for the scandal, had left office before the death of Harding.

The administration, through the Department of Justice, brought suit against the lessees of the Teapot Dome and other oil fields, and after a lengthy trial before the Supreme Court the leases were cancelled and the oil reserve lands in Wyoming and California were returned to the Government. The decision of the Supreme Court was handed down on October 10, 1927, and was based on the conclusion that the transaction had been made "by means of a collusion and conspiracy." Subsequently the principal actors in the leasing transaction were brought to trial on the charge of conspiracy to defraud the Government.

Election of 1924. The Republican National Convention met in Cleveland in June, and nominated Coolidge by an almost unanimous vote, completing the ticket by naming General Charles G. Dawes for Vice-President. The Democratic Party's candidate was John W. Davis, and Robert M. LaFollette received the nomination of the Conference for Progressive Political Action.

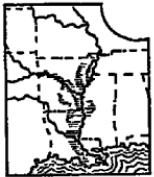
About 30,000,000 votes were cast at the election in November, and Coolidge was elected President by the greatest popular majority on record. In the Electoral College he received 382 votes, Davis, the Democratic nominee, 136 votes, and LaFollette, 13, these coming from his home state, Wisconsin.

Legislation—69th Congress. Many of the measures recommended by President Coolidge were enacted by this Congress and became law. A new revenue bill provided for further tax reduction; authority was given for arranging debt settlements with European nations; the Senate approved American participation in the World Court; a farm relief bill failed to pass the Senate; prohibition enforcement was actively debated, but no action was taken to revise the law; a bureau

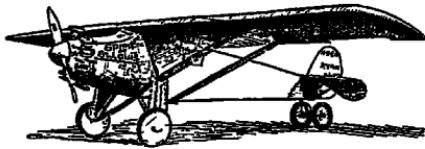
COOLIDGE'S ADMINISTRATION

1923

1929



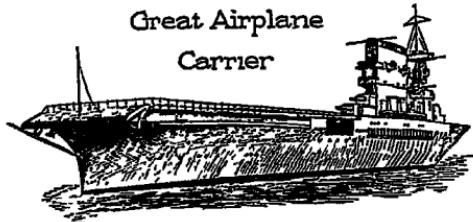
Flood Control
Legislation



Spirit of St. Louis
Progress in Aviation

Great Airplane

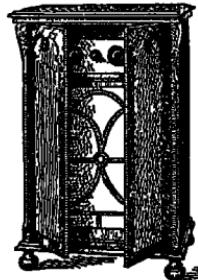
Carrier



M'Nary-Haugan
Farm Relief Bill
Vetoed



Coolidge Homestead, Plymouth, Vermont



Radios in
Millions of Homes

of commercial aviation was established in the Department of Commerce, and other measures were passed to encourage aviation.

Larger salaries to justices of the Federal Courts were granted; a radio regulation act was passed; the McNary-Haugen farm relief bill was passed, but vetoed by President Coolidge; the federal budget, calling for the expenditure of over \$4,000,000,000, was passed.

Legislation—70th Congress. In his message to the Seventieth Congress President Coolidge again urged constructive economy as necessary to a continuance of credit; tax revision to remove inequalities; funds for national defense; and a study of the flood control problem in the Mississippi Valley.

Congress passed the Mississippi flood-control bill; a merchant marine bill; a tax-reduction bill; and the McNary-Haugen farm relief bill. The last named was again vetoed by President Coolidge, and Congress failed to pass it over the veto.

Many investigations were undertaken by Senate Committees. Among these were expenditures in the 1926 primaries in Pennsylvania and Illinois; presidential primary expenditures; public utilities' financing; extent of unemployment; condition of American Indians, and chain-store merchandising.

Progress in Science. A new era in communication was inaugurated early in 1927 by the demonstration of a new electrical apparatus for transmitting both voice and picture simultaneously. Television is the name given to this method, which was later shown to the public by theatrical producers.

Earlier in the year, for the first time, a successful telephone conversation was maintained between officials in New York and London. This result was effected by a combination of wired land lines and trans-oceanic radio.

The marvel of this decade is the radio. Millions of receiving sets in American homes are bringing entertainment and instruction in kind and quality never before known. The President's addresses are broadcast to millions of listeners, who would not otherwise know the sound of his voice.

Notable Events. All previous peace-time achievements in aviation were overshadowed by the records made by daring aviators in the years 1926, 1927 and 1928. Americans were responsible for much of the progress made in the art and science of aviation.

On May 9, 1926, Commander Richard E. Byrd and Floyd Bennett flew from Spitsbergen to the North Pole and return in a trimotored Fokker plane. Aviators of other countries made long and successful flights. Congress passed a bill establishing a Bureau of Commercial Aviation. An air-mail service organized by the Post Office Department grew to large proportions and reached out to all parts of the country.

Among all the attempts to cross the Atlantic by air, many of them successful, the exploit of Charles Lindbergh stands as the classic example of perfect flying. Taking off from Roosevelt Field, Long Island, on the morning of May 20, 1927, he went direct to Paris in a non-stop flight of less than 34 hours, in a single-motored monoplane. Interest in aviation developed rapidly and extended to all parts of the world. (See *LINDBERGH, CHARLES A.*)

The sixth International Conference of American States was held in Havana, Cuba, during January and February, 1928. Added public interest was given to this Conference, because of its invitation to President Coolidge to attend. He delivered the formal opening address, in which he dwelt strongly on the freedom of the American republics from the jealousies and hatreds of the Old World, and on the great advances in the application of the principles of human rights, political freedom and equality, and economic opportunity.

In August, 1927, President Coolidge startled the country by stating, "I do not choose to run for President in 1928." And in June, 1928, the National Republican Party, in convention at Kansas City, nominated Herbert Hoover, Secretary of Commerce in President Coolidge's Cabinet, to succeed him.

Foreign Relations. Friendly relations were maintained with all nations. Mexican laws claiming ownership of oil lands, on which Americans had made large investments, for a time caused some irritation, but friendly diplomacy brought the controversy to a satisfactory end. Political revolution in Nicaragua led to the landing of U. S. forces to protect American interests, and President Diaz of Nicaragua requested the United States Government to assist in suppressing the local rebellion and in supervising an election of president in October, 1928. United States forces sent to Nicaragua to carry out these purposes were successful in suppressing the rebellion and restoring peace.

CONWAY, THOMAS (1733-1800), leader of the Conway Cabal (which see), was an Irishman by birth. He gained military experience in the French Army, and in 1777 offered his services to the American Congress. He was given the rank of brigadier general, and was active in the battles of Brandywine and Germantown. After the discovery of the intrigue, he resigned from the army (1778), and was wounded in a duel with an American officer, who resented his attacks on Washington. In 1779, he returned to France.

COOK, FREDERICK A. See NORTH POLAR EXPLORATION.

COOK, JAMES (1728-1779), one of the most celebrated of English navigators. He entered the British navy at the age of twenty-seven, and in 1759, as sailing master of the *Mercuru*, made a valuable survey of the Saint Lawrence River and the Newfoundland coast. This service led to his appointment to the command of a scientific expedition in the Pacific, and promotion to the rank of lieutenant. In the course of this expedition he visited New Zealand, discovered New South Wales and returned home in 1771 by way of the Cape of Good Hope. In 1772 Captain Cook, then risen to rank of commander in the navy, had charge of another successful voyage of exploration and discovery in the Pacific. In the course of an expedition begun soon after this he attempted to find a northwest passage. On this voyage he also explored the Western coast of North America and rediscovered the Sandwich (now Hawaian) Islands, on one of which he was killed by natives.

COOKERY, the art of preparing food for the table by the use of heat. Cookery makes food more palatable and aids in its digestion. For the purpose of cooking, foods are classified into meats and vegetables, the meats including fish. Cooking meats coagulates the albumen which they contain, breaks up the muscular fiber, so that it is more easily separated and digested, and liberates juices and gases that contribute to its flavor. The general principle to be observed in cooking meats is to coagulate the albumen on the outside, so that it will not allow the juices to escape. This preserves the most nourishing part of the meat within the cut and makes the cooked part more palatable. Meats are cooked by boiling, roasting, baking, broiling, braising and

frying. Unless it is desired for soup, the meat should be placed in a hot oven or over a hot fire, or in case of boiling, into very hot water, in order that the albumen on the outside may be coagulated.

The object of cooking vegetables is to break up the starch which they contain and to soften and loosen the fiber. When cooked, starch becomes much more digestible than in the raw state. Vegetables are cooked by boiling, baking or steaming. Most vegetables are best cooked by immersing them in boiling water for a short time and then completing the process at a lower temperature. Dough which contains a raising mixture, such as yeast or baking powder, is either baked or steamed, according to the article (see BREAD). Vegetables should not be over-cooked, as over-cooking destroys much of their nutritive value and renders them indigestible.

Further discussion of this subject may be found in the article Domestic Science.

COOLEY, THOMAS MCINTYRE (1824-1898), an American jurist and author and one of the world's authorities on international law, was born at Athens, N. Y. He removed to Michigan and was admitted to the bar of that state in 1846. In 1859 he became professor, and subsequently dean of the faculty, of the law department of the University of Michigan. In 1864 he was appointed to the state supreme bench, and in 1867 he became chief justice. In 1887 he was placed at the head of the interstate commerce commission, but resigned in 1891. His books include treatises on the constitutional limitations upon state legislatures, constitutional law and torts.

COOPER, JAMES FENMORE (1789-1851), the first American novelist who became well known in Europe, sometimes called the "American Scott." He was born in Burlington, N. J., and studied at Yale, but he was not a close student and was expelled from college in his third year. Other things besides books he knew well, and his intimate acquaintance with the forests and his knowledge of the sea, gained while serving in the United States navy, furnished him later with the materials for his novels. After his retirement from the navy just before the War of 1812, he settled at Cooperstown, N. Y., and took to farming.

Having boasted to his wife that he could write a better novel than many of the roman-

tic ones which were appearing in his time, he produced *Precaution*, a tale which was commonplace, because it dealt with phases of English high life with which Cooper was totally unacquainted. It did, however, start him on a literary career, and when in 1821 he turned to tales of adventure in his own country and wrote *The Spy*, he was recognized at once as a novelist of force. In the twenty years that followed Cooper brought out many novels, chief among them *The Pilot* and *The Red Rover*, sea tales, and the *Leatherstocking Tales*, his great series dealing with frontier life in America. This series includes *Deer-slayer*, *The Last of the Mohicans*, *The Pathfinder*, *The Pioneer* and *The Prairie*, of which *The Last of the Mohicans* is the best.

After spending seven years in Europe, Cooper returned to the United States and settled in his own home. The superior culture of Europe had made him look with displeasure on the ruggedness of his own country, and he attempted, by articles published in various papers, to explain to his fellow countrymen what he thought they ought to be. The result was, of course, bitter censure, and Cooper, unable to accept criticism, brought numerous lawsuits against those who attacked him. This course brought down upon him much ridicule at home and abroad.

Cooper's writings were immensely popular in their own day and are still very widely read. They were the first novels of forest and prairie life, and while they have many faults, his vivid description and stirring narrative account readily fit the enthusiasm with which they were received. It has been objected that his Indians are idealized, and that his characters are not real, but Cooper probably knew his Indians much better than those who criticised him, and it must be admitted that in *Natty Bumppo* and *Long Tom Coffin* he has created characters which are worthy of a lasting place among the characters of fiction.

COOPER, PETER (1791-1883), an American inventor, manufacturer and philanthropist, born in New York City. In 1808 he was apprenticed to a carriage maker, and



JAMES FENIMORE COOPER

while with him he invented a machine for mortising the hubs of carriages, which proved of great value to his employer. Later, Cooper undertook the trade of cabinetmaking, the grocery business and the manufacture of glue. In connection with the latter he made oil, prepared chalk, whiting and glass and became very wealthy. Having purchased 3,000 acres of land in Baltimore, Cooper erected there the Canton iron works, and in 1830 he constructed from his own designs the first locomotive engine ever made in America, the *Tom Thumb*. Soon after this he sold his iron works in Baltimore, and returning to New York built an iron foundry, which he afterward turned into a rolling mill, making the first rolled iron beams for construction purposes.

In 1845 Cooper removed his works to Trenton, N. J., and built three blast furnaces, the largest then known, bought the Andover iron mines and built a railroad through the eight miles of country to bring the ore to his furnaces. He was a liberal promotor of the Atlantic cable and was president of the New York, Newfoundland and London Telegraph Company. In 1853 he founded Cooper Union for the advancement of science and art and erected a fine building for its purposes (see COOPER UNION). During the financial agitation following the crisis of 1873 he was active in the Greenback movement, and in 1876 he was the candidate of an independent party for President.

COOPERAGE, the art of making vessels from pieces of wood bound together by hoops. Barrels, casks, tubs, firkins and pails are good illustrations of vessels made by cooperage. The parts of a cask are the staves, the hoops and the heads. The staves are widest in the middle and gradually taper toward the ends. This shape produces the bulge in the cask. When vessels are required which do not have the bulge, the staves are straight. If they are the same width throughout, the vessel is a cylinder. If they are wider at one end, the vessel flares, being larger either at the top or bottom.

Formerly all cooperage was done by hand, the cooper carefully shaping the staves and giving the edges the proper slant to fit them together in the vessel, but now the work is done entirely by machinery. The staves are cut by a saw in the form of a cylinder, having teeth upon one end. They are then cut to the proper length by circular saws and

placed upon an edging machine, which gives them the desired finish. The heads are made by matching the boards and fastening them together with pins and glue. When the glue is dry the boards are placed upon a turn-table, where they come in contact with a circular saw which cuts them into the desired shape and also trims the edges so that they will fit into the casks. See BARREL.

COOPERATION, *ko op cr a'shun*, in social economics, the association of any number of individuals or societies for mutual profit, whether in the purchase and distribution of commodities for consumption, or in the production of commodities, or in the borrowing and lending of capital among members.

The most powerful cooperative force in the industrial system is what economists have termed "the division of labor," and this has its counterpart in the multiform divisions of capital in its application to the maintenance and extension of industry.

Coöperation, as technically understood, occupies a middle position between the doctrines of the communists and socialists on the one hand, and private property and freedom of individual labor and enterprise on the other. It takes its departure from communism at a very definite and significant point. While the latter would extinguish the motive of individual gain and possession in the sentiment of a universal happiness or good and remodel all existing rights, laws and arrangements of society to this end, cooperation seeks to ameliorate the social condition by joining together increasing numbers of associates in a common interest. Cooperators look to ownership and operation by economical organizations of their own rather than by the state.

The cooperative societies, though attended with the most varied fortune, have greatly increased in number and in amount of business in recent years. The form, objects and rules of these associations may be divided into three general classes.

(1) *Societies of consumers*, the object of which is to buy and sell to members alone, or to members and non-members under differing conditions, the necessaries of life or the raw materials of their industry.

(2) *Societies of producers*, the object of which is to sell the collective or individual work of the members.

(3) *Societies of credit or banking*, the object of which is to open accounts of credit with their members and advance them loans for industrial purposes.

These societies have taken many forms, such as friendly societies, burial societies, arrangements of private firms by which the workmen share in the profits of the employers (more accurately known as *profit-sharing*), and building and loan societies.

Cooperative Marketing. The relatively small producing unit in agriculture makes it difficult for the individual farmer to follow his products very far on their road to the consumer. The combination of the products of a number of farms in a marketing organization often makes it possible for farmers to improve upon the results obtained in the sale of their product. This may come from the reduction of waste, effecting of economies, improvement of quality, employment of salesmanship, or the rendering of other services. Farmers employ the cooperative rather than the ordinary business company plan because it fits their needs better. They are interested in service and in getting benefits in form of improved returns, rather than as returns on capital.

Cooperative marketing began with relatively simple local organizations such as cheese factories, creameries, and farmers' elevators. Later, larger organizations to enter the terminal markets or sell on a national basis were developed. Of these larger organizations, there are two general types, one, the federated type, in which the central is made up of local or district associations; the other, the centralized type, in which the grower holds direct membership.

There are over 12,000 farmers' cooperative marketing and purchasing associations in the United States, with a membership of over 3,000,000 farmers. In a recent year, these organizations did a business of nearly two billion dollars. California leads in the value of business handled, because of its immense citrus interests, while Minnesota has the largest number of organizations.

COOT, *Loot*, or **MUD HEN**, a bird of the rail family, that lives near and on the water, fleeing to the weeds and grasses when alarmed. The common coot of the United States is a dark slate color, almost black on the head and neck. The toes are not webbed, but have white scalloped bands, which nearly meet. The bill is a dull white.

COPAL, a gum resin yielded by different trees in Africa, South America, India and Australia, and differing considerably in its qualities, according to its origin. In gen-

eral it is hard, shining, transparent and citron-colored. When dissolved in alcohol or turpentine it makes a beautiful and very durable varnish.

COPENHAGEN, *ko pen'ha'gen*, DENMARK, the capital and largest city of the country, situated on the islands of Amager



COOT

and Zealand. The strait separating the two forms an excellent harbor and is crossed by two bridges. The city is handsomely laid out with gardens and fine buildings. It is the seat of the government and the residence of the king. Among the principal buildings are the Church of Our Lady; Holmens Kirke, dating from the seventeenth century; the Church of our Redeemer; the Roseborg Palace; the Exchange, dating from the seventeenth century; the Glyptothek, containing a very choice collection of sculpture; the new art museum; the royal library, containing 540,000 volumes; the National Museum, and the Thorwaldsen Museum, containing Thorwaldsen's grave and a fine collection of his works of art, which he bequeathed to Copenhagen. Copenhagen also contains a university, the only one in Denmark and the oldest one in Northern Europe. It was founded in 1478, and contains a library of 300,000 volumes.

The city is the chief center of Scandinavian literature, science and art. Shipbuilding is extensively carried on here, and there are machine shops, sugar refineries, chemical works and textile factories. The commerce is very important, and more than one-half of Denmark's trade passes through Copenhagen. The name means *merchants'*

haven. King Christopher, the Bavarian, in 1443 made the place the capital of the kingdom. It has withstood several sieges, among which was the one by King Charles X of Sweden (1658-1660), when Copenhagen saved the Danish monarchy, and the one by the English in 1807, when a part of the city was destroyed. Population, 1921, 666,159; 1931, 770,000.

COPERNICUS, *ko pur'ni'kus*, NICHOLAS (1473-1543), a famous astronomer, the first man of science to announce the theory of the movement of the planets about the sun. He was born at Thorn, Poland. Having studied medicine at Cracow, he afterward devoted himself to mathematics and astronomy, and in 1500 he taught mathematics at Rome with great success. Returning to his own country, he entered into holy orders, was made a canon in the Cathedral of Franenburg and began to work out his new system of astronomy. Doubting that the motions of the heavenly bodies could be so confused and so complicated as the Ptolemaic system made them, he was induced to consider the simpler hypothesis that the sun was the center around which the earth and the other planets revolved.

Besides this fundamental truth, Copernicus anticipated, for he can scarcely be said to have proved, many other of the principal facts of astronomical science, such as the motion of the earth on its axis and the immense distance of the stars, which made their apparent position the same from any part of the earth's orbit. The great work in which Copernicus explained his theory was completed in 1530, but it was not given to the world until twelve years later, because of popular prejudice against new ideas.

COPLEY, *kop'li*, JOHN SINGLETON (1737-1815), an American painter of historical subjects, and of portraits, born in Boston, Mass. He traveled extensively in Europe, and after 1776 he settled in London. He was elected a member of the Royal Academy in 1783. His most celebrated picture is the *Death of Lord Chatham*, now in the National Gallery. Among his famous portraits are likenesses of Mrs. Boylston, in Harvard Memorial Hall, and of Mary Storer, in the Metropolitan Museum.

COPPER, one of the most useful of metals, of a slightly reddish color and about nine times as heavy as water. This metal is familiar in every household; it forms the

bottoms of teakettles and wash boilers, and other household utensils; the cent of the United States and Canada and the penny of Great Britain are almost entirely of copper (see ALLOY). However, it has more important uses in commerce. It forms a part of many alloys, being one of the ingredients in gun metal, brass and bronze. Electrical machinery and electrical apparatus of all kinds must have copper parts, and the vast mileage of telephone and telegraph wires are of copper. Street-car trolley wires for conveying the electric current are of copper. In war copper is an absolute essential for casings for shells.

It derives its name from the Latin word *cuprum*, the name for Cyprus, the island on which the copper used by the Greeks and Romans was obtained. Next to gold, silver and platinum, copper is the most ductile and malleable of metals. It is more elastic than any other metal except steel, and the most sonorous of all except aluminum. As a conductor of heat and electricity it ranks next to silver. It has a disagreeable odor, and a nauseous metallic taste. It is not acted upon by water, but tarnishes when exposed to the air, becoming covered with a green carbonate.

Distribution. Copper occurs native in crystals, threads and thin plates. In some of the older rocks, blocks of native copper weighing several tons have occasionally been obtained. The ores are numerous and abundant. The most important of these are compounds of copper with silver, oxygen, carbon or iron, such as copper glance, gray copper and copper pyrites or yellow copper. Nearly all of these ores also contain more or less lead and silver, and in their reduction these metals are obtained.

Copper is found in paying quantities in more than twenty nations. In average years the United States is first in yield, followed by Chile, with Canada third and Rhodesia fourth. The Belgian Congo is forging ahead. The United States produces more than a third of the world's total, somewhat more than 250,000 tons a year, on the average. Canada's copper averages about 180,000 tons a year. The leading producing regions of the United States are from Montana southward, and Michigan. The first four states in order of production are usually Arizona, Montana, Utah, and Michigan. In some years this order of precedence changes a little. See BRONZE.

Reduction of the Ore. In extracting copper from the rock at the Lake Superior mines, all that is necessary is to crush the rock and separate the copper from it by washing. This is then melted. The process of separating it from ore containing sulphur is somewhat complicated. The ore is first crushed, then concentrated, that is, caused to pass over a number of tables which have a vibratory motion and over which water is flowing. By this process the particles of rock not containing ore are separated out and rejected. The concentrated ore thus obtained is heated to redness, or roasted, for the purpose of driving off the sulphur. The ore is then smelted and an impure copper is obtained. This is usually sent to the eastern markets, where it is refined. Some of the ores are successfully treated by electrolysis (see ELECTROLYSIS), the use of a powerful electric current being employed instead of heat for extracting the metal.

Compounds. There are a number of compounds of copper, and all of them are exceedingly poisonous. Native carbonates, known as *malachite* form beautiful cabinet specimens, since they are of a brilliant green or blue color. Some of the largest pieces of this rock are sometimes cut and polished for mantels and table tops, and quite a good deal of it is used in the manufacture of small ornaments.

COPPERAS, sulphate of iron or green vitriol, a salt of a peculiar pungent taste and of a fine green color. When exposed to the air it assumes a brownish hue. It is much used in dyeing fabrics black and in making ink, and in medicine as a tonic. The copperas of commerce is usually made by the decomposition of iron pyrites.

COPPER GLANCE, a copper ore of a leadish or iron gray color, containing eighty-one parts copper and nineteen parts sulphur. In the United States it occurs in the copper mines of the Lake Superior region and in the mines of New Mexico and Arizona, near the Gila River, and also in small quantities in New Jersey and Connecticut. Cornwall (England), Sweden and Germany contain deposits. When occurring in crystals copper glance forms beautiful specimens.

COPPERHEAD, a North American snake, about three feet long, of a golden or bronze color, that has a bright copper-colored head. On the body are V-shaped dark blotches which meet upon the back.

The copperhead is a sluggish snake, appearing usually only at night, and it is not inclined to bite unless frightened or disturbed. It is one of the three poisonous snakes of the Northern states and has many names in different localities; among them are cotton-mouth, moccasin and red adder.

COPPERMINE RIVER, a river of northern Canada, near Copperhead Mountains. It rises in Point Lake and flows into Coronation Gulf in the Arctic Ocean. This river is about three hundred miles long and contains a great number of waterfalls and torrents, which render it useless for travel.

COPPER SULPHATE, *sulfayt*. See **BLUE VITRIOL**.

COPRA, *kop'ra*, the dried kernel of the cocoanut, which yields an oil used in the manufacture of soap and candles. Copra is obtained in large quantities from the islands of the Pacific, and is an important article of commerce. The cocoanut meat is dried in the sun or in a kiln, and also by hot air, the latter method producing a higher percentage of oil. One gallon is the average yield of thirty cocoanuts. The cake remaining after the oil is extracted is utilized as fodder and manure.

COPTS, *koptz*, a class of people, resident in Egypt, who observe a rude form of the Christian religion and who are supposed to be a relic of the old Egyptian race who built the monuments. By association with the Moslems they have acquired many Moslem customs and are losing their distinctness as a people. The men wear a black or brown turban and a long gown, with sometimes a black coat or jacket over it. The religion of the Christian element of Ethiopia is Coptic.

COPYING DEVICES, devices for duplicating letters and manuscripts without rewriting them. One of the oldest processes is by the letterpress, which usually consists of a book containing leaves of tissue paper and a press. The instrument to be copied is written in copying ink, either with a pen or upon the typewriter; this ink contains sugar or some other substance that prevents its drying rapidly. After writing, an oil-back is placed under the leaf in the book. The leaf is then dampened and the article to be copied is laid face down upon it, with another oil-back to protect the book from the moisture. The copying book is then placed in a press which works with a lever or screw,

and when pressure is applied the writing is transferred to the dampened page of the book. This form of copying is now almost obsolete.

Copies of typewritten letters, etc., are now made on the typewriter by the use of sheets of carbon paper. This paper has one side covered with a coloring matter which, when struck with the die of the typewriter or pressed with a pencil, is transferred to the surface of the sheet lying next to it. In copying, the carbon is laid next to the sheet upon which the writing is produced, with its colored surface lying upon another sheet of paper, and as the writing proceeds either with pencil or typewriter, the ink from the carbon is impressed upon the second sheet of paper. By employing two or three carbons, as many copies can be made from one writing.

Devices for producing a larger number of copies from writing are the hectograph and the mimeograph.

The Hectograph. This device consists of a pad or tablet, made by mixing gelatin and glycerin in proportions of two ounces of gelatin to thirteen ounces of glycerin. The gelatin should be dissolved in water and the glycerin heated before mixing. The mixture should then be boiled for several hours over a salt water bath, then poured into a shallow pan. The ink used is usually an aniline ink containing a small proportion of glycerin. The copy is written upon ordinary paper, which is then laid face down upon the hectograph and carefully rubbed with the hand or a cloth, when the ink is transferred to the surface of the hectograph. The copy is then removed and as paper is pressed down upon the hectograph, a slight portion of the ink adheres to it so as to reproduce the writing. The hectograph principle is embodied in improved devices bearing numerous trade names.

The Mimeograph. This machine was invented by Thomas A. Edison, and works on the principle of the printing press. It consists of a corrugated steel plate which resembles a very fine file, and a specially prepared linen paper which is coated on one side with paraffin wax. By writing on the paper with a stylus, over the steel plate, the wax is cut through, forming a stencil. The stencil is then placed in a frame and so adjusted that the paper upon which the impressions are to be made is easily placed under it and removed. The ink is applied by a roller similar

to that used in the hand printing press. As the roller moves over the paraffin paper, the ink passes through the stencil, reproducing the writing on the paper beneath. From such a stencil from one hundred to three hundred copies can be made. A recent modification of this mimeograph consists of a rotary apparatus, working very much on the plan of a cylinder printing press. The stencil is made on the paraffin paper by the typewriter. This is then attached to the cylinder and inked upon the inner side. As the cylinder revolves, the stencil is brought in contact with the paper upon which the copy is printed. By one of these devices several hundred copies can be made from one stencil.

The Multigraph, the most perfect device for printing letters or circulars which have the appearance of typewritten documents. The essential feature is a long cylindrical drum, in two parts, one of which revolves. Each drum contains slots running across its face. In the slots of one of these drums metal type repose; the various letters are pushed into the slots of the stationary drum, and arranged line by line, to compose the subject-matter to be printed. When all the type lines are in position they are made secure. Printing is accomplished by revolving the type drum, after the manner in which a cylinder printing press operates, the sheets of paper passing beneath the drum and receiving the type impression, after the type has come in contact with an inked ribbon.

COPYRIGHT, the legal protection extended to an author or publisher by which he is guaranteed the exclusive right to publish or sell his literary, musical or artistic productions. It is protection against those persons who, if not restrained by penalties, might appropriate the work of others and commercialize it for their own benefit, thus robbing the rightful owners of the fruits of their labor.

In the United States. The Constitution (Art. I, Sec. 8) empowers Congress to—

“ . . . promote the progress of science and useful arts by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries”

• Thus were copyrights and patents made possible in the United States. See **PATENT**

The copyright laws have been several times amended, the last time in 1928. To obtain a

copyright, send to the Register of Copyrights, Library of Congress, Washington, D. C., for an application blank. Fill out this blank and return it with a postal money order or bank draft for \$2.00, and at the same time send two copies of the edition of the publication which is to bear the copyright imprint, which should appear on the title page, or the page following (for example, see this volume). Other details can be obtained from the Register. Dramatic and musical compositions and works of art are subject to the same copyright as books. The exclusive right of performing such compositions not printed, or of causing them to be performed, belongs to the author.

The copyright office does not protect the rights of an author or publisher in court. If copyrighted material is used unlawfully a suit at law in the United States District Court is the means of redress. The copyright office is only a place of record; its records showing the granting of copyrights and priority of ownership are available in the trial of cases, and are accepted by the courts as *unimpeachable evidence*.

A copyright is granted for a term of twenty-eight years, and it may be renewed one year before its expiration for a like term. After fifty-six years all protection is withdrawn. A work to be copyrighted in the United States must be printed from type set in that country.

In Canada. Copyrights in Canada are issued in a manner similar to the plan employed in the United States. The copyright office is in charge of the Department of Trade and Commerce, Patent Office Branch. By the acts of 1921 and 1923, the term of copyright extends during the lifetime of the author and fifty years after his death. To obtain a copyright the author must be a British subject, a subject of a foreign country adhering to the Berne Convention, or a resident of His Majesty's dominions. If the owner of the copyright fails to print his book in Canada, the government may grant a license for the publication, the licensee paying a royalty to the owner.

International Copyright, a mutual agreement between nations as to copyright privileges. In March, 1891, the United States Congress passed an international copyright act. Under it agreements have been made with most countries by which works may be copyrighted therein, under special rules.

COQUELIN, *ko klan'*, a distinguished family of French actors.

Benoit Constant Coquelin (1841-1909), the most famous of the family, was trained for the stage at the Paris Conservatoire. After a successful career in France he visited the United States in 1888, winning high praise, and again in 1900-1901 he pleased American and Canadian audiences, this time as Sarah Bernhardt's leading man in her production of *L'Aiglon*. Among other rôles which he portrayed with success were the leading male parts in *The Marriage of Figaro*, *The Misanthrope*, *The Barber of Seville* and *Cyrano de Bergerac*. Coquelin was extremely versatile and could adapt himself to a wide range of parts. His acting charmed because of its directness and naturalness, and he had perfect mastery of technique.

Ernest Alexandre Honoré Coquelin (1848-1909) was a younger brother of the foregoing. He also was trained at the Conservatoire, and at his graduation received the first prize in comedy. He played in a number of dramas with his brother, and also won a reputation as the author and reciter of monologues.

Jean Coquelin (1865-), son of Constant Coquelin, studied under his distinguished father in Paris. In 1897 he created the rôle of Raguneau in *Cyrano de Bergerac*, and later played in *Thermidor*, *More than King* and other plays.

CORAL, the limestone skeleton formed by minute sea animals belonging to a family closely resembling sea anemones. The skeletons take many beautiful forms, and coral is a valuable material for jewelry.

The animal, which is really a *polyp*, is commonly known as the coral insect. It consists of a jelly-like mass, in the center of which is a sac which serves as a stomach. Radiating from this are minute arms, which assist the polyp in clinging to the rock and in drawing food into the stomach. There are numerous species of coral polyps, each of which builds a coral peculiar to itself. *Tree coral*, which is so named because it resembles the branches of a tree, is formed by a polyp that propagates by buds, which spring from its sides in such a way as to constitute the branches. Another species forms a coral resembling bundles of straw fastened together, and known as the *organ-pipe coral*. Still another forms a coral re-

sembling in its shape and convolutions the human brain. This is known as the brain coral. The most common and widely distributed polyp is that which forms the *reef coral*.

In color corals range from pure white through yellow, pink and red, to black. The pink, red and black varieties are highly



CORALS
1. brain coral; 2. coral showing polyps, 3. tree coral, 4. organ-pipe coral

prized for jewelry and other ornamental purposes. The pink and red are found in the Mediterranean, and because of their value coral fisheries are maintained off the coasts of Southern Europe and of Northern Africa. The corals are procured by a grapping apparatus which is dragged over the bottom of the sea and breaks off the coral and holds it until it can be drawn to the surface. These corals take a high polish and are wrought into jewelry, necklaces and other ornaments, the chief centers of the industry being Naples and Genoa. In value they vary according to their color and fineness, the most beautiful specimens bringing a high price.

Coral reefs are found in nearly all tropical waters, and in some localities, as off the coast of Australia, they are of great extent. The reef-building coral will not live in water that falls below a temperature of 60°. It begins building upon the bottom of the sea and each generation builds upon the skeleton formed by the one preceding it, so that in the course of centuries these

little animals have built up great barriers that rise above the surface of the water. The reef as built by the coral polyp, however, does not approach within five or six feet of the surface, as the animals cannot live above that level. The upper portions of the reef are built up from broken pieces of coral or other rock lodged upon the original reef by the action of the waves. These finally reach the surface; soil is formed by the powdering of the coral; in this earth seeds lodge and plants spring up. Reefs thus built around the coast of submerged volcanoes take a circular form and enclose a lagoon of quiet water (see ATOLL). The study of the various rock formations of the earth shows that the coral polyps have been working for many ages.

CORBEL, in architecture, a piece of stone, wood or iron projecting from the vertical face of a wall, to support some part of the building. Corbels are of a great variety of forms and are ornamented in many ways. They were used especially in Gothic architecture, and appear in the decorative schemes of modern Gothic buildings in all great cities. See CONSOLE.

CORCORAN ART GALLERY, a famous collection of works of art in Washington, D. C., founded and endowed with a fund of \$900,000 by William W. Corcoran (see below). There are many remarkable sculptures, paintings and ceramics in the collection, which is housed in a beautiful building near the White House. Among the works of great merit are Powers' *Greek Slave* and Velas' *Dying Napoleon*. A free school of art is connected with the institution.

William Wilson Corcoran (1798-1888), founder of the collection, was born in Georgetown, now a part of Washington, D. C. In 1828 he had charge of the real estate held by the United States Bank in the District of Columbia, and continued as their agent until 1836. In 1837 he began his career as banker and broker in Washington, and during the Mexican War, by his connection with the placing of government loans, he acquired an immense fortune. In 1854 he retired from

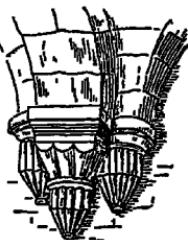
the banking business and gave much of his time to philanthropy.

CORDAY d'ARMONT, *kor dā dahr mahn'*, MARIE ANNE CHARLOTTE (1768-1793), commonly called Charlotte Corday, a famous figure of the French Revolution. She was born in Normandy. Her lover, an officer in the garrison of Caen, was accused by Marat as a conspirator against the Republic and was assassinated by villains hired for that purpose. Thus, as well as a deep-rooted hatred against all oppressors, determined Charlotte Corday to free her country from Marat. Having obtained an interview with Marat at his own house, she plunged her dagger into his bosom and gave herself up to the attendants who rushed in at his cries. After her trial and conviction she suffered death by beheading. See MARAT, JEAN PAUL.

CORDILLERA, *kawr dī'yah rah*, or *kawr dī'yer ah*, or **CORDILLERAS**, a term applied to the mountain system which extends along the western coast of North and South America from Alaska to the southern point of South America. It includes the Rocky Mountains, the Sierra Nevadas and other ranges in the United States, several ranges in Mexico, Canada and Alaska, and the Andes in South America. The term is sometimes used in a more general way to denote any extensive mountain system. The name is from the Spanish for *cord* or *string*. See ROCKY MOUNTAINS; ANDES; SIERRA NEVADAS.

CORDITE, a powerful smokeless gunpowder, so named because it is manufactured in the form of a cord. It is made up of about eighty parts of nitrocellulose, fifteen of nitroglycerine and five of vaseline. Cordite burns slowly when lighted, but explodes when it strikes its mark, due to pressure. It is used in small arms and in cannon.

CORDOBA, or **CORDOVA**, ARGENTINA, capital of a province of the same name. It occupies a beautiful and well-sheltered site in the valley of the Primero, at an elevation of 1,200 feet. Among the notable buildings are a cathedral, a government palace, a library and several hospitals. Here are located a well-equipped national observatory and a national university, founded in 1613. In 1934 it had nearly 2,800 students. The city is an important commercial center, and it exports quantities of hides, wool and live stock. Among the manufactures are lime, bricks and flour. Population, 1934, 280,000.



CORBEL

CORDUROY, a thick, cotton stuff, having a cut pile like velvet, but corded or ribbed on the surface. It is a popular fabric for garments worn out of doors, and is sometimes used to cover furniture and for fancy work.

A *corduroy road* in the United States is a rough road over swampy or marshy places, made by laying logs side by side across the driving path.

COREA, or **KOREA**, the name by which Chosen was known previous to its annexation to Japan in 1910. See CHOSEN.

CORELLI, *ko rel'ē*, MARIE (1864-1924), a popular writer of novels of the sensational type. She was born in Italy and was educated in England and France. Charles Mackay, a song writer, adopted her as his daughter in her childhood. Her permanent residence was Stratford-on-Avon. Miss Corelli's first work, *The Romance of Two Worlds*, appeared in 1886. Among her other works are *Thelma*, *Barabbas*, *The Sorrows of Satan*, *The Master Christian*, *The Love Everlasting* and *The Secret Power* (1921). She was also a proficient musician.

CORIANDER, *ko ri'an'der*, a plant of the parsley family, native of Italy and cultivated in other parts of Europe, and to a certain extent in North America. The whole plant has an unpleasant smell, but the fruit, improperly called seed, is very agreeable and aromatic when dry. It is used in medicine as a remedy for dyspepsia, and as an ingredient in cookery and confectionery.

CORINTH, *kor'inth*, the name of a city, gulf and isthmus, well known to the ancient world, and of considerable interest at the present time.

Corinth, the city, was one of the great trading centers of ancient Greece. Situated at the southern tip of the isthmus which joins the Peloponnesus to the northern part of Greece, it possessed all the splendor which wealth and luxury could create, and its citadel, nearly 2,000 feet high, rendered it a strong fortress. It had two harbors, Lechaeum, on the west side of the isthmus, and Cenchreæ, on the Gulf of Athens, or Aegina. Corinth was famous as the place where the Isthmian games were held. It was also one of the most magnificent and one of the most voluptuous cities of Greece, but of its famous works of art, there remain only seven massive pillars of a temple to Apollo.

The city was conquered and destroyed by

the Roman consul, Mummius, in 146 B. C. Julius Caesar rebuilt it about one hundred years later, but its commerce could not be restored, though it became a place of note and importance. After its conquest in 1458 by Mahomet II, it was held by the Turks till 1823, except from 1687 to 1715, when the Venetians held it. Saint Paul lived here a year and a half, and two of his epistles are addressed to the Corinthians. The present town, called New Corinth, lies three miles northeast of the ancient city of Corinth. Population, about 5,000.

The Gulf of Corinth, or Gulf of Lepanto, extends through the center of Greece about eighty miles. Its shores, varied by rocky capes and fertile plains, and its high mountains farther inland, furnish beautiful scenery.

The Isthmus of Corinth, connecting the Peloponnesus with Northern Greece, is about ten miles long and varies in width from four to eight miles. Here, where the wall built to protect it from northern invasions terminated on the gulf, the Isthmian games were celebrated. A canal across the Isthmus, completed in 1893, connecting the gulf of Corinth with the Saronic Gulf, enables the largest vessels to pass through. At the eastern end of the canal is the town of Isthmia, at its western, Poseidonia.

CORINTH, Miss., the county seat of Alcorn County, ninety miles southeast of Memphis. The place had an interesting history in the Civil War. It was a point of strategic importance, since it was the junction of two railroads at right angles to each other. It was fortified by the Confederates, but was evacuated after the Battle of Shiloh, May 29, 1862. On October 3 of the same year, Generals Van Dorn and Price with 22,000 Confederates attempted to recapture Corinth, defended by Rosecrans with 20,000 Federals. In spite of the greatest valor on the part of the Confederate troops, the attack was repulsed. The Confederates lost nearly 5,000 in killed, wounded and captured, while the Union forces lost about 2,500. Population, 1930, 6,220.

CORINTHIAN ORDER. See COLUMN.

CORINTHIANS, *ko rin'θi ans*, EPISTLE TO THE, the name given to two letters which Paul addressed to the Church at Corinth, about A. D. 57. These Epistles were occasioned by dissensions in the Church and by reports brought to Paul of certain un-Christ-

dian practices among the Corinthians. The first Epistle contains the famous chapter (XIII) on love, in which the Apostle says, "And now abideth faith, hope and love, these three; but the greatest of these is love," (Revised version). The second Epistle, which differs much from the first, exhorts the people to be steadfast in the faith, and contains personal testimony concerning Paul's own experiences.

CORIOLANUS, *kor i o la'nu s*, the hero of a familiar story of the early Roman Republic. In 491 B C, when the people were suffering for lack of food, he suggested that they be deprived of grain unless they agreed to give up their tribunes Coriolanus, to escape the wrath of the people, fled to the Volscians, whose armies he led to the gates of Rome. Only when his aged mother begged him with tears to save the city did he lead the enemy away. Shakespeare's play *Coriolanus* is based on this legend. See TRIBUNE.

CORK. The tough, elastic, woody substance from which are made stoppers for bottles, is the thick bark of a species of oak tree which grows in Spain, Portugal and other parts of Southern Europe and in the north of Africa. Cork is light, elastic, impervious to water, and by pressure can be greatly reduced in bulk, returning again to its original size. It is only one-fourth as heavy as water.

The outer bark of the cork oak falls off of itself if left alone, but for commercial



CUTTING CORK FROM TREE

purposes it is stripped off when judged sufficiently matured, this being when the tree

has reached the age of from fifteen to thirty years. The first stripping yields the coarsest kind of cork. In the course of eight or nine years or even less the same tree will yield another supply of bark of better quality, and the removal of this outer bark is said to be beneficial, the trees thus stripped reaching the age of one hundred and fifty years or more.

The bark is removed by a kind of ax, parallel circles being cut round the tree and united by longitudinal cuts, so as to produce oblong sheets of bark. These vary in thickness between three-fourths of an inch and three inches. Care must be taken not to cut into the inner bark or the tree will be killed. The pieces of cork are flattened out by heat or by weights and are slightly charred on the surface to close the pores.

The cork is sorted into different grades, after which it is put into sheet-iron boxes and steamed, so it will not take the temper out of the circular knives or punches which slice up the cork and make it into stoppers. It is also used for making life-preservers. The small bits of cork remaining from a sheet used for such purposes is granulated and used in the making of linoleum, for packing for refrigerators and for other insulating materials.

CORK, a city in the south of Ireland, capital of the county of Cork, situated on the River Lee, 137 miles southwest of Dublin. It is built partly on an island and partly on the banks of the river, which is crossed by nine bridges. It has a large, safe harbor, formed by the estuary of the Lee at the mouth of which is the port of Cobh. The city has four monasteries, a fine cathedral, a free library, schools of science and art, Queen's College, a large park and many beautiful residences. Cork has a large export and import trade. The principal manufactures are leather, iron, glass, gloves, paper and liquors. There are also iron foundries, yards for the building of iron ships and important fisheries. Cork was founded in 622, was taken by Cromwell in 1649 and in 1690 by Marlborough. Population, 78,490.

CORLISS, GEORGE HENRY (1817-1888), an American inventor, born at Easton, N. Y. The construction of stationary steam engines was revolutionized by his improvements, the most important being the introduction of a cut-off mechanism, by which the valves are opened and closed instantaneously. Corliss invented many ingenious devices, and fur-

nished the Corliss engine which moved all the machinery at the Philadelphia Centennial Exhibition in 1876.

CORM, from the Greek *kormas*, which means *the trunk of a plant or tree with branches removed*, a name which defines a solid underground stem related to tubers and to bulbs. Corms are very commonly referred to as bulbs, which they closely resemble; they are more properly root-bulbs. Among the conspicuous examples of plants with corms are the gladiolus, cyclamen, crocus and Indian turnip. See BULB.

CORMORANT, a large web-footed bird, having a long and strongly hooked bill, a long neck, short wings and a rather long, rounded tail. The cormorants, of which there are several species, are excellent swimmers and divers, and yet they often



CORMORANT

perch on trees. In color they are generally black or dark. The double-crested cormorant is found occasionally in the inland waters of the United States and often along the coast. The common European cormorant is larger than a goose, but has smaller wings. The Chinese have for many centuries trained the cormorants to fish for them, which they do very successfully, obediently bringing the fish to their masters without mutilation. When thus employed strings are tied around the necks of the birds, to make it impossible for them to swallow the fish they catch. Two fishermen in one boat can handle fifteen or twenty cormorants with ease.



A corn-club boy

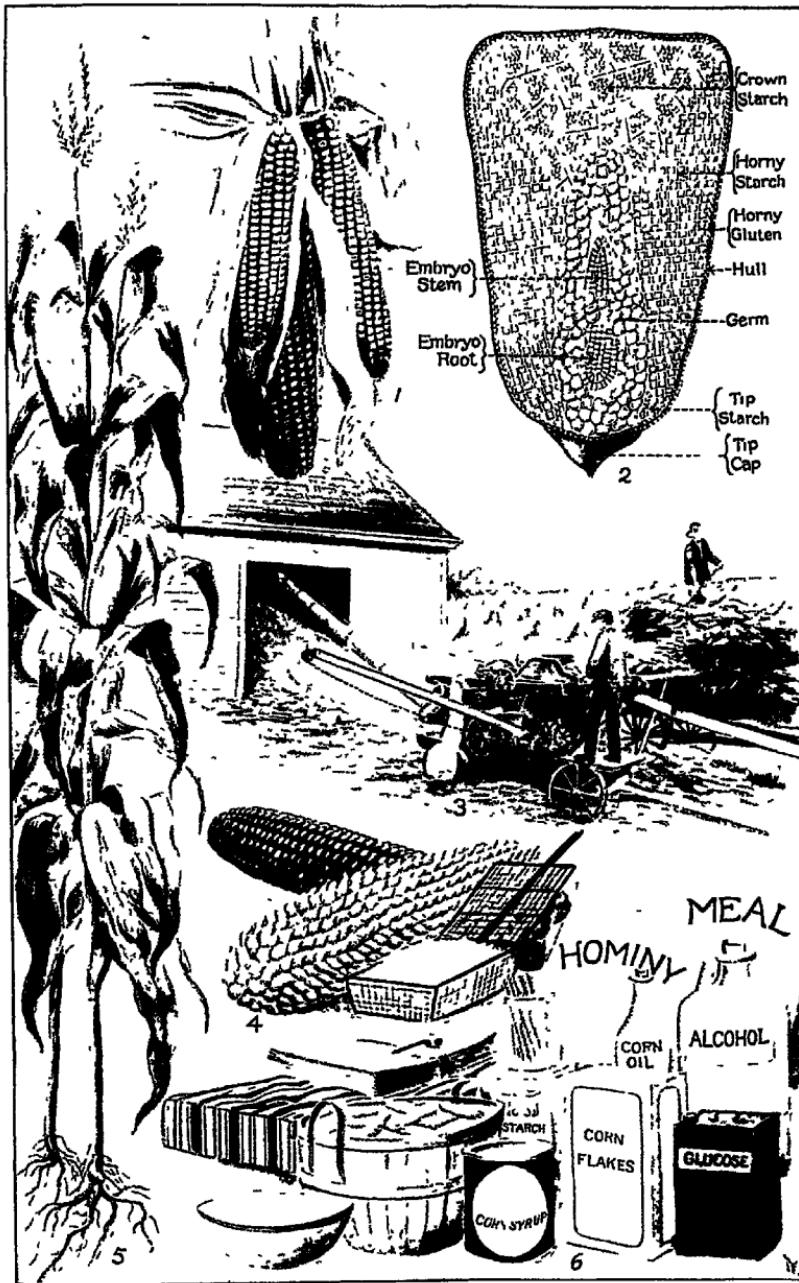
CORN, the most important agricultural product of the United States in value of crop, acreage and production, and one of the most valuable food plants in the world. Though it has not the importance of wheat as a bread food, it is the basis of successful farming, for upon it depends the raising of all food animals and therefore the production of such commodities as wool, hides, milk, eggs and butter. And since work animals, too, are fed on corn

and hay, the production of other grains is dependent on the corn crop. The corn plant is often used as an emblem of bountiful harvests, and especially as a symbol of the prosperity of the American republic. Edna Dean Proctor's charming poem *Columbia's Emblem* expresses this idea in these lines:

The rose may bloom for England,
The lily for France unfold,
Ireland may honor the shamrock,
Scotland her thistle bold;
But the shield of the great Republic,
The glory of the West,
Shall bear a stalk of the tasseled Corn,
Of all our wealth the best'

Description. Corn belongs to the grass family. In general appearance it resembles the sugar cane and sorghum. The stalks are from four to twelve feet high, according to the variety, are jointed at frequent intervals, are of a dark purple and green color and are concave on one side. Their leaves are long, slender and pointed, and are of a dark green color. The fruit, called the *ears*, grow from the axils of the leaves. Corn bears two kinds of flowers, those at the top of the stalk, bearing the stamens and forming the *tassel*, and those on the ear, constituting the *silk* and bearing the *pistils*. Each thread of the silk is a pistil which terminates in a kernel. The seeds, or kernels, are arranged in rows around a thick stem called the *cob*. The ears may have eight or twelve or more rows, but they always have an even number. They are covered with long slender glumes called *husks*.

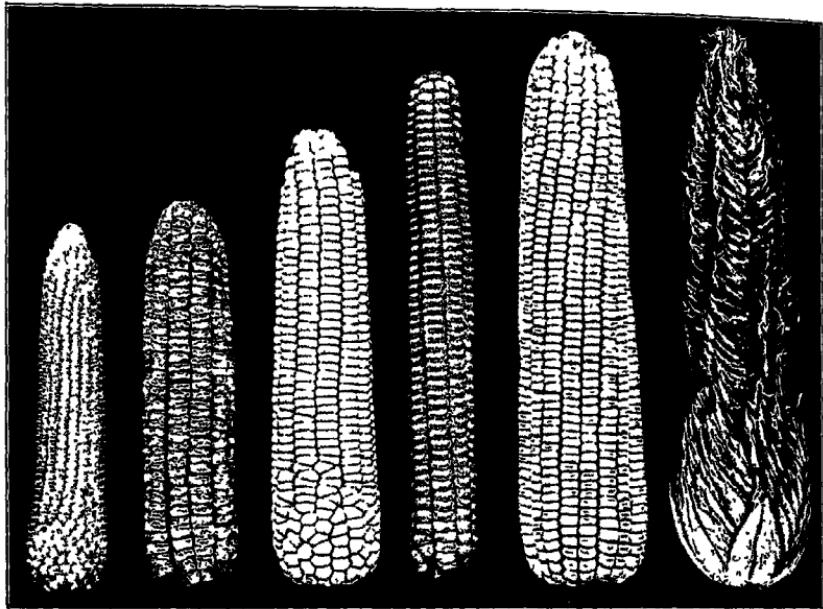
Corn is a native of America and was not known previous to the discovery of the New



1. Cluster of Ears
2. Detail of Kernel

3. Husker and Shredder
4. Popcorn

5. Corn Plant
6. Corn Products



NORTH AMERICA'S SIX TYPES OF CORN

Pictured from left to right, they are pop, sweet, flour, flint, dent, and pod corn.



A STEP IN THE PROCESS OF FEEDING THE WORLD

On most farms strong backs and pliant muscles are called into service to tie great shocks of corn, for in this harvest machinery is slow in displacing hand labor.

World. Columbus and other early explorers found it in general use among the Indians, for whom it constituted the chief article of food. From this circumstance it came to be known as Indian corn, but the qualifying term is now heard very seldom. The native name was *mase*, a term still in use in Europe, where *corn* is a general term for grain. In its native state the plant belongs to the warm temperate and semitropical regions, but by cultivation it has been made to extend over a wide range of latitude, in the United States being cultivated as far north as the 48th and 47th parallels.

Types and Varieties. There are many of these; those adapted to the short seasons of the cool temperate regions are much smaller in stalk and seed than those growing in the warmer portions of the corn belt. The important varieties are the flint corn, dent corn, sweet corn and pop corn. *Flint* corn has a small stalk, seldom exceeding six feet in height, and small, closely compact ears and very hard kernels. Its color is either white or a deep yellow. The yellow variety is the corn generally raised throughout New England, New York and the northern portions of Wisconsin and Minnesota. The *dent* corn contains the largest number of varieties and is by far the most important. This is the corn grown all over the region known as the corn belt of the United States and furnishes nearly all the crop raised in the country. It takes its name from the peculiar form of the kernels, which have an indentation on the outer end and taper to a point. Under suitable conditions the stalks attain a height of from eight to ten feet and sometimes grow as high as twelve or fourteen feet, but this is uncommon. *Sweet* corn contains a larger proportion of sugar than the other varieties, its small kernels are soft and nutritious, and it is raised for food, being eaten green or canned in large quantities. *Pop* corn takes its name from the peculiarity of the kernel of cracking open when heated. The kernels are small and enclosed in an exceedingly tough outside covering. When heated, the steam arising from the moisture in the interior bursts this covering and causes the kernel to turn itself inside out.

Cobless Corn. Not a great deal of attention has been given to the feat of producing corn without the cob on which we have thought Nature intended it to grow. It has

been accomplished by Luther Burbank, although he doubts that practical results will be reached. He believes a small cob will be better than entire elimination of the cob. A stalk of cobless corn is shown in the illustration accompanying the article on Burbank.

It is believed that the earliest corn was cobless. Burbank's present cobless corn illustrates the steps backward in evolution towards its original form. The decrease in size of the cob increases the quantity of kernels. It is expected of this corn that instead of merely adding one kernel to the ear it will ultimately double the number of kernels to the ear, for the energy now going to waste in the large cob will be transferred into the production of more kernels. Practically cobless corn offers a great benefit to the farmers, for if there is even one kernel increase to each ear this would mean a total crop increase of 5,000,000 bushels per annum in the United States alone.

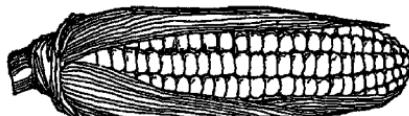
Growth and Harvesting. Corn is planted, cultivated and harvested almost entirely by machinery. The seed is planted in rows about four feet apart, and the hills are the same distance from one another. As soon as the young plants appear the cultivation begins and must be continued every few days until the plants become so large that they are liable to injury from the cultivator. The crop is then allowed to ripen. The methods of harvesting depend upon the use for which the crop is intended. If only the ears are desired, the plants may be left standing until the seed is thoroughly ripened and dry. The ears are then broken off, husked and placed in granaries. But if the stalks are desired for fodder, the plants must be cut before the ears are dry, otherwise they will lose much of their nutriment (see *SILO AND SILAGE*). Corn harvesters are now in general use on the large farms.

Corn Products. Every observing boy and girl can name many uses to which corn is put, but few people know that the entire range of useful things derived from corn covers nearly two hundred items.

Chemists have shown how a good grade of paper can be made from parts of the stalk—newspapers and at least two books have been printed experimentally upon such paper. One hundred pounds of cornstalks can be made to produce a gallon of alcohol—possibly a future motor fuel. The sticky surface of postage stamps is made from

dextrin, a corn product. The starch in corn comes to the dining table in numerous foods, it is also the base of many other commodities, and is a filler in many more, such as explosives, cosmetics, fireworks, glue, ink, shoe polish, tanning material, and sizing.

The oil in the kernel is an ingredient in the making of varnish, soap, automobile



UNITED STATES, 2,700



ARGENTINA, 210



UNION SOUTH AFRICA, 180



RUMANIA, 107



ITALY, 105

LEADING COUNTRIES IN CORN PRODUCTION

Figures represent millions of bushels grown in average years.

tires, glycerine, dyes, oilcloth, and paints. Corncobs are not waste material. From them are made gums for labels; an incredible number of corncob pipes are made, for they produce a cooling smoke; the farmer who first used corncobs for fuel was doubtless surprised to find that they have about one-third the fuel value of hardwood; several varieties of mattresses are stuffed with pulp derived from them. Cornsilks contain ingredients that find uses in medicines.

Food Value. Corn and wheat have about the same food elements and practically the same food values, as both are rich in starch and sugars (carbohydrates) and in protein. Wheat, however, is rich in gluten, while the reverse is true of corn. It is the sticky property of gluten that makes wheat so admirable a grain for leavened bread, and gives it its superiority as a human food. All preparations of corn flour are very nutritious and well repay using as substitutes for wheat.

Production. The United States produces more than two-thirds of the corn crop of the world, in average years. The annual crop ranges from 2,100,000,000 bushels upward; one year (1920) it was 3,208,500,000 bushels; nearly every year it is in excess of 2,500,000,000 bushels. Production in the states varies from year to year, but Iowa is always first, Illinois second. Sometimes

Nebraska is third, but usually Indiana has this honor, with Texas, Ohio, Minnesota, or Wisconsin in fourth place. Corn is the most valuable single crop in the United States, considerably ahead of wheat and cotton, often worth as much as both of those crops combined. Other countries producing corn in considerable quantities are Canada, Mexico, Argentina, Chile, Uruguay, Austria, Hungary, Bulgaria, Rumania, Italy, Russia, Spain, India and China.

The ordinary farmer within the great corn belt produces an average yield of less than 40 bushels per acre. The more careful farmers get an average of about 60 bushels per acre. From observation it has been noted that while the cost of growing a 60-bushel crop is but slightly greater than the cost of growing a 40-bushel crop, the profits are more than doubled. Yields of 80 bushels per acre are not uncommon in all sections of the great corn belt, and crops of as many as 100 bushels to the acre have been obtained under unusually favorable conditions.

In Canada the average annual yield is about 60 bushels to the acre. The total crop



IOWA, 325



ILLINOIS, 260



INDIANA, 110



NEBRASKA, 96



WISCONSIN, 92

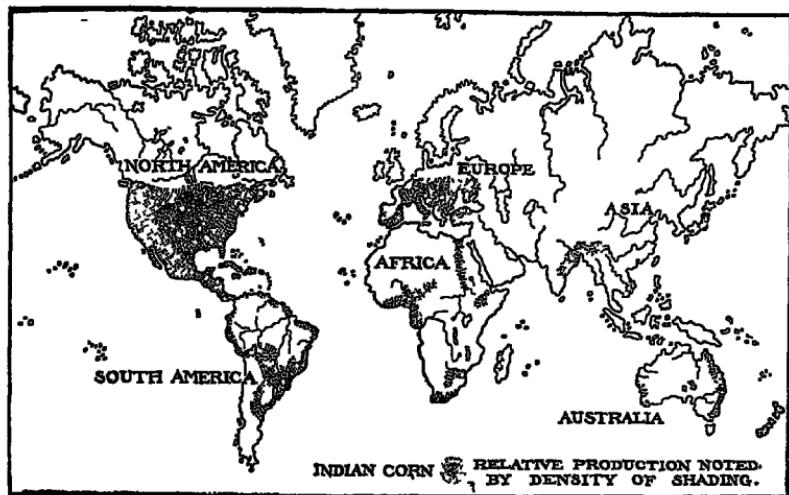


OHIO, 88

STATES LEADING IN PRODUCTION
Figures represent average yield per year, in millions of bushels.

for Canada is generally about 20,000,000 bushels, but the output was reduced during the World War because of shortage of labor. The cost of producing the crop is much higher in Canada, but the net profit is about the same.

Loss Through Waste and Pests. The United States Department of Agriculture declares that every 100 pounds of cornstalks will yield a gallon of alcohol; in not utilizing this by-product the agriculturist has been allowing a very great amount of wealth to go to waste. No man with the interests of his fellow-being at heart would advocate an increase of the production of alcohol for improper uses. We do not like to think that any helpful drug produces drunkards and all



the ills that follow in the tram of drink, but there are many legitimate uses for alcohol, and were it more plentiful and cheaper, the opportunities to use it would multiply.

If one acre of corn will yield from 10 to 12 tons of cornstalks, which is about 20,000 pounds, that amount of raw material would produce easily 1,200 or 1,300 pounds of alcohol, or over 200 gallons. The returns from such conversion can be easily figured.

If ground in a wet condition, then dried, cornstalks may be kept indefinitely and be held ready at any time for manufacture into alcohol. The alcohol derivable from cornstalks that now go to waste in this country would not only drive all the machinery of our factories, say the government authorities, but would furnish the requisite power for all our railroads, steamboats, run all our automobiles, heat and illumine all our houses and light the streets of every city in the Union.

In recent years the European corn borer has proved a serious pest of corn and other garden plants. First appearing in New England, it spread through the Central and Western States and into Ontario. The United States Congress has frequently appropriated money to attempt to arrest its progress. To eradicate it is declared almost a hopeless task, for the corn borer attacks many different kinds of plants, the total destruction of which would turn the infested area into a desert. The method of control is to destroy

all cornstalks, either by using them as ensilage or by burning them during the winter.

Boys' Corn Clubs. The corn-club movement among American boys was definitely organized in 1909, and within a few years it had enlisted the active interest of over 90,000 boys. Each boy who enrolls is pledged to grow at least one acre of corn, and in caring for this plot he puts into application the most recent principles in regard to plowing, seed selection, spacing, cultivation, fertilization and the keeping of accurate accounts. Demonstration workers, county school superintendents and teachers supervise the work, and the boys are further aided by circulars and bulletins sent out by the United States Department of Agriculture. Prizes are offered for excellent work, the rewards being based on yield per acre, profits, quality of yield and written accounts of work done. The prizes include trips to fairs, corn shows and educational institutions, and animals, farm implements, books, scholarships in agricultural institutions, etc. See Boys' and Girls' 4-H Clubs.

The importance of these clubs lies not only in their educational and disciplinary value, but in the practical benefits resulting from up-to-date farming. Yields of 100 bushels to the acre are common; one boy reported a yield of 229 bushels on a Southern farm. It is an encouraging fact that the better-farming movement receives added impetus wherever corn clubs are maintained.

Essays on Corn

Practical Essay Work. The reason that composition work is often so unsatisfactory, and that pupils consider it the worst kind of drudgery, is because they are assigned themes which they do not understand and upon which they can obtain little or no information. The exhaustive treatment of school subjects in these volumes makes it an invaluable aid to the teacher who wishes to make her work interesting and successful.

Below are given a few essays on corn, prepared after a study of articles and illustrations pertaining to this subject. These essays are given to show teachers how the subjects presented in this work can be used to advantage, and as illustrations of what may be done in other subjects.

The illustrations are simple and such as any pupil will delight in drawing. If, however, the teacher feels unable to supervise work of this kind, very interesting illustrations can be found in catalogues of farm implements and articles in agricultural journals and other periodicals. These can be cut out and pasted on the pages of the essay.

On this and the eight pages following we have endeavored to present these essays in form not more artistic than the work of the average boy and girl can be made. If the student sees that he can write and draw as well as the writing and the illustrations shown herewith, it is a matter of encouragement to him.

By way of special emphasis we would like to state that in a great number of instances the boys and girls are easily discouraged in their attempts at drawing because their efforts fall immeasurably short of the perfection seen in the copy. It is true that a perfect copy leaves no room for doubt as to exact form and detail but for all practical purposes of these essays there is much encouragement lent to the exercise if the students can see in the copy from which they work that which has actually been produced by boys and girls with no better preparation than their own. It is therefore with pleasure that we offer such results in the following pages as may be achieved by every average pupil in any school in sections where corn is grown.



Description of the Corn Plant

Carolyn Ives

Corn is a sort of grass, that is, like wheat, barley, rye and oats, it belongs to the grass family. It is raised in almost every country having a warm or temperate climate.

The plant grows from four to twelve feet high, according to the variety. The stalks are pointed, dark green and purple in color, and are concave on one side. The leaves appear at the joints and partially enclose the stalk, where they seem to grow from it. They are long, slender and pointed and when fully grown bend over so as to give the plant a very graceful and beautiful appearance.



Corn has two kinds of flowers: those growing at the top of the stalk, and forming the tassel, and those found in the ears. The first kind is called staminate flowers because they bear only stamens. The second kind consist of the silk and constitute the pistillate flowers, because the silk is nothing more nor less than a cluster of pistils, each of which ends in a kernel of corn on the ear.

The ears appear in the axils of the leaves at the joints. They are covered with a kind of leaf called husks. As the corn begins to ripen, the husks open at the top, showing the yellow kernels beneath, and the larger ears because of their weight, bend over so that by the time they are fully ripe they hang downward. The ears begin to form at the lower joints on the stalk, and the lowest ears are the oldest, and the highest the youngest.

The roots extend far into the ground for the purpose of obtaining moisture and food from the soil. Could a corn plant be removed from the earth so as to have all of its roots joined to it, their number and length would surprise us.

When growing, the corn plant is of a deep green color with a brownish or purplish tassel at the top, and stalks that are purple on one side. The early frosts tend to turn the tips of the leaves and some of the husks a yellowish-brown; this color deepens and increases in extent as the corn becomes ripe. At any season of the year a field of corn is a beautiful sight.



Preparation of the Ground.

Mary Martin

The farmer who looks forward to a good crop of corn uses great care in preparing the ground. The soil must be made mellow and fine so that the roots of the corn can penetrate it and absorb nourishment.



The ground is first plowed to a depth of seven or eight inches. On small farms, where but little corn is raised, the old-fashioned plow, turning but one furrow, is used, but on the large farms in the corn belt, gang plows turning two, three and sometimes more furrows are employed. On ground that has previously been plowed, a gang plow turning three furrows is easily driven by four horses, and can be operated with three horses. The driver rides and controls the team and plow from his seat. Some very large gang plows are hauled by steam engines.

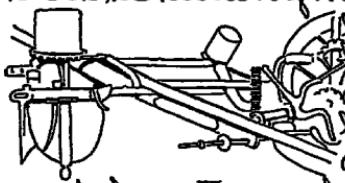
After plowing, the ground is harrowed. If the ground is old and mellow, only a toothed harrow is needed, but on new ground and ground where the soil is hard and lumpy, the disk harrow is used first and is followed by the common harrow. The harrowing is continued until the soil is fine and smooth for planting.



Planting and Cultivating Corn.

Many to Events

On the small farms in New England and other Eastern states, much of the work is done by hand labor. On the

 large farms in the corn belt, however nearly all of this work is done by machinery. The

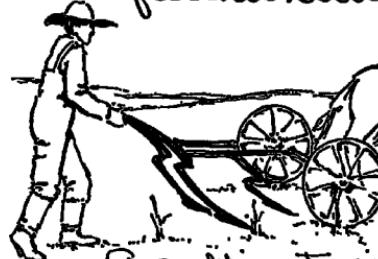
corn planter generally used has two wheels and two sharp runners. These runners make a small furrow, into which the seed is dropped from boxes connected with a device known as a checkerboard. These machines are drawn by horses, and the best of them plant four rows at once, and with a good team, a machine will seed about ten acres in a day.

For the large dent corn, the rows are four feet apart each way. This gives each hill of corn 16 square feet of ground. Sometimes another kind of planter is used, in which discs take the place of runners, as shown in the picture. In both kinds of planters, the wheels press the soil over the corn in the furrow.

Soon after the corn comes up, cultivating or plowing as it is usually



called, begins, and continues every few days until the corn is so large that further cultivation is liable to injure the plants by breaking the stalks and disturbing the roots. The corn is then laid by until the harvest.



A cultivator is used in plowing corn. It destroys the weeds, and stirs the soil. The cultivator has two wheels supporting a framework, to which beams bearing hoe shaped teeth are attached. The cultivator is drawn by horses and guided by two handles, which extend back from the frame. One or two rows are plowed at a time. After the field is plowed one way it is usually plowed the other way so that the second plowing crosses the first.

The old way of cultivating corn was far different. A cultivator was used to plow between the rows one way; then this left a good part of the work to be done with the hoe. The work was slow and tiresome. If two men hoed an acre of corn in a day they called it a good day's work. Later a small cultivator was used, and this removed the weeds between the rows. This method is still used in regions where only small fields of corn are planted.

Harvesting Corn

Thomas Martin

Until within a few years corn was harvested and husked entirely by hand. The ears were broken off and the stalks left standing and were considered worthless. Now, by the use of the corn

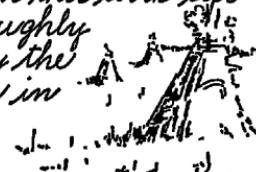


harvester, the corn is cut and the stalks are pushed under a binding frame, bound and raised on a platform from which the shock is set upon the ground.

The corn harvester is similar to the reaping machine, but it works with a slower motion.

Husking or shredding follows cutting and binding. The shocks are hauled to the farmyard, and the stalks are run through the shredder. This machine breaks the ears from the stalk and removes the husks, dropping them in one place and the clean ears in another.

The part of the machine which does this work so neatly is made up of a frame which has from two to six steel rollers, containing flanges, and so geared that the rollers in each pair turn towards each other. The rollers are about four feet long, and the frame has one end lower than the other, so that the ears, as they are husked, can slide down the incline and drop out. Some shredders have a sheller attached to them, but in order to have this work successfully, the corn must be thoroughly dried before shredding. Usually the farmer prefers to store the corn in the ear in cribs until it is thoroughly dry.



Marketing the Corn Crop

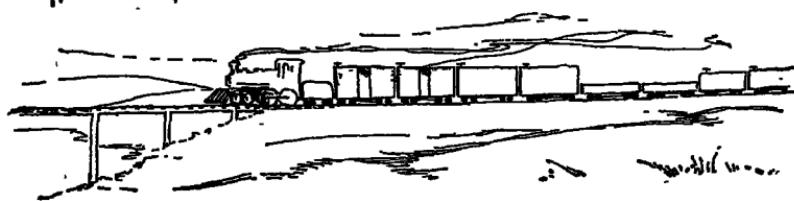
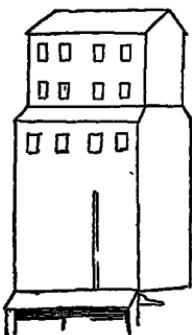
Arthur Clark

After the corn is husked, it is stored in long, narrow buildings called cribs. The sides of the crib are made of narrow boards nailed to uprights so as to leave a space about an inch wide between the boards. This allows the air to circulate through the crib and dry the corn.

After the corn is dry, it is shelled by a sheller operated by steam or horse power. The corn is then hauled in wagons to the nearest elevator, from which it is loaded into cars and shipped to large cities. From these centers it is distributed to the mills and manufactories which make the various corn products.



Poor roads are a great hindrance in marketing the corn, and every movement to secure better country roads, and to reduce freight rates is a movement towards giving the farmer greater profits on his crop.



Outline on Corn

- I. GENERAL DESCRIPTION
 - (a) Stalk
 - (1) Height
 - (2) Jointed
 - (3) Color
 - (4) Structure
 - (b) Leaves
 - (1) Shape
 - (2) Length
 - (3) Position
 - (c) Flowers
 - (1) Silk
 - (2) Tassel
 - (3) Location on stalk
 - (4) Location on ear
 - (d) Fruit—Ears
 - (1) Arrangement of kernels
 - (2) Covering
 - (3) Location on stalk
- II. HISTORY
 - (a) Where first cultivated
 - (b) When first used by white men
 - (c) How introduced to all nations
- III. KINDS
 - (a) Flint corn
 - (b) Dent corn
 - (c) Sweet corn
 - (d) Pop corn
- IV. PLANTING
 - (a) How soil is prepared
 - (b) Machinery used in planting
 - (c) When planted
- V. CULTIVATION
 - (a) Care of corn field
 - (b) Extent of care required
- VI. HARVESTING
 - (a) Time of harvest
 - (b) Method of harvesting
 - (c) Where gathered corn is stored
- VII. WHERE CULTIVATED
 - (a) United States
 - (1) What portion of world's crop?
 - (2) Importance of crop
 - (a) Annual yield
 - (b) Canada
 - (1) Extent of crop
 - (c) Other countries
- VIII. USES
 - (a) As food

- (1) For mankind
 - (a) Meal
 - (b) Hominy
 - (c) Hulled corn
- (2) For animals
- (b) Miscellaneous uses
 - (1) Starch
 - (2) Glucose
 - (3) Alcoholic liquors
- (e) By-products
 - (1) Cobs
 - (a) Syrup manufacture
 - (b) For fuel
 - (2) Husks and stalks

Questions on Corn

Why called Indian corn?

How many dishes are made from corn meal in your home?

Start with the farmer and name some of the industries that arise from or are dependent upon corn.

To what family of plants does corn belong?

How does corn rank as a food throughout the world?

What does corn contain that makes it valuable as a food?

How many kinds of flowers has the plant? Which flower forms the tassel? Which the silk? What is at the inner end of each thread of silk?

Do the ears have an odd or even number of rows? How are they covered? Why?

Of what continent is corn a native? What is known of its use among the Aztecs and Incas? How far north is corn now cultivated?

How does corn compare in value with wheat?

What are the results of a failure in the corn crops of the United States?

How is corn planted? Cultivated? Harvested? When does the cultivation begin? Upon what do the methods of harvesting depend? What machines are now in use on the larger corn farms?

What proportion of the world's people use it as food? Give three forms in which it is commonly used.

CORNEA, *kor'ne ah*. See **EYE**.

CORNEILLE, *kor'na'y*, **PIERRE** (1606-1684), one of the greatest of French dramatists. Previous to 1636 he had published various comedies and tragedies, which, while they were far superior to the dramas then on the stage, had not established his claim to a high rank. But in 1636 appeared his famous *Cid*, and at once he was recognized as the greatest dramatist which France had thus far produced. After the *Cid*, *Horace*, *Cinna* and *Polyeucte* appeared in rapid succession, works which show Corneille's genius at its best. The works which followed added little to his fame. Corneille observed in his tragedies the three unities of the Greeks, making his action take place within twenty-four hours and within one town, and relating every incident to a central plot.

CORNELIAN. See **CARNELIAN**.

CORNELL, *kawr nel'*, **UNIVERSITY**, an institution established at Ithaca, N. Y. in 1868. Its income has been derived chiefly from lands granted by the Federal government and from private gifts, notably those of Ezra Cornell (see below), \$500,000, the General Education Board, \$7,500,000, Henry W. Sage, \$1,175,000, Oliver H. Payne, \$500,000, George F. Baker, \$350,000, former students, \$1,500,000.

Ezra Cornell and Andrew D. White were members of the state legislature and secured the action that placed the land grant funds at the disposal of the university. Mr. White was chosen as the first president.

The university maintains the colleges of arts and sciences, architecture, engineering, agriculture, home economics, medicine, veterinary medicine; the school of law, the graduate school, the graduate school of education and the summer session.

The institution occupies a beautiful campus of 350 acres at the head of Cayuga Lake. Nine buildings are devoted to engineering, about twenty to agriculture, one to home economics, and others to the other colleges.

The general library contains about 900,000 volumes. Departmental libraries are maintained in the several schools and colleges. There are many valuable collections in these libraries, such as those on history, Dante, Petrarch, Iceland, philology, architecture, Spinoza, slavery, Germanic literature, Slavic history, China, the American Civil War, hydraulic and sanitary engineering, law reports, and veterinary medicine.

Ezra Cornell (1807-1874), founder of the institution, was born in New York state. He had very little education and began his career as a mechanic. His first work was in connection with the construction of telegraph lines, and the system of stringing wires on poles originated from his suggestion. After this he began to organize telegraph companies and gave much of his time to the construction of lines, as a result of which he amassed a large fortune.

CORN'NET, a wind instrument of brass, with a cup-shaped mouthpiece, resembling the bugle in construction, but differing from it in the possession of three keys, or pistons, which can be pressed down by the fingers, giving a wide range of tones. It has a very agreeable tone and is a leading instrument in nearly every band and orchestra.

CORNFLOWER, a flowering plant of the composite family, also called *bachelor's button* and *kaiser-blume*. It is a weed in Central Europe, where it grows profusely, but is a popular garden plant in America. The flowers are borne on slender, branching stems, which grow from a foot to two and one-half feet high. The flowers are made up of rows of tubular florets, the outer ones being the larger and more showy. In color they are typically a beautiful blue, but they appear in various other shades.

CORNING, N. Y., the county seat of Steuben County, ten miles northwest of Elmira, on the Chemung River and on the New York Central, the Erie and the Delaware, Lackawanna & Western railroads. The city manufactures glass, terra cotta goods, brick, lumber, railroad supplies and pneumatic tools. The important buildings include the city hall and Corning Free Academy. Corning was incorporated as a village in 1849 and became a city in 1890. Population, 1930, 15,777.

CORN LAWS, a name commonly given to certain statutes passed by the Parliament of Great Britain to regulate trade in grains. The name *corn* in England refers to any grain, not especially to maize, or Indian corn, as in America.

The first form of interference by legislative enactment with the trade in England, beginning soon after the Norman conquest, was the prohibition of exportation, an expedient used in those times to prevent scarcity in a sudden emergency. The policy was continued, with slight changes, till the time of Charles II, when import duties, upon a slid-

ing scale, were for the first time introduced. These remained in force till 1846, when Sir Robert Peel, influenced by a popular agitation, and more especially by the Anti-Corn-Law League, headed by Cobden and Bright, carried a measure repealing the duty on imported grain, except a nominal sum of one shilling per quarter. Thus also in 1869 was done away with, thus leaving the importation entirely free.

CORMS, small growths of the skin caused by pressure or friction. They are found most frequently on the toes, and in this case are the result of wearing shoes that are too tight. There are two kinds that are very common—fibrous, cone-shaped corns and soft corns. The former occur on top of the toes. They are pressed downward by the shoe into the flesh and are very painful unless the top growth is kept pared off. Soft corns generally appear between the toes, a position that renders them very annoying. If neglected they may give rise to painful ulcerations. Wearing loose shoes with insoles of cork is recommended as a relief for corns. A well-known physician has said that to cure corns one must begin back in childhood, a process attainable only in theory. The lesson for parents is to have their children wear properly-fitting shoes, as well established corns are difficult to cure permanently. A standard remedy for removing the hard part of a corn is a solution of salicylic acid and collodion. Bad cases should have the attention of a reliable chiropodist.

CORNUCOPIA, *kawr nu' ko' pi a*, a wreathed horn filled to overflowing with fruit, flowers and grain, used as the symbol of plenty. In art it is frequently represented as held by the Goddess of Plenty or some other symbolic figure. The horn of plenty is a familiar design in both heraldry and architecture.

CORNWALL, ONTARIO, the county town of Stormont County on the Saint Lawrence River, fifty-six miles southeast of Ottawa and sixty-eight miles southwest of Montreal. The Saint Lawrence at this point passes through the Long Sault Rapids, which steamers avoid by using the Cornwall canal, eleven miles long. The town is on the Canadian National and the Ottawa & New York railways. Cornwall has abundant electric and water power for its manufacturing industries, of which the chief products are furniture, cotton goods, pulp, paper and la-

crosse supplies. It also has iron foundries and a silk mill. The water and sewerage systems are owned by the municipality.

Population, 1926, 9,125, in 1931, 11,126.

CORNWALLIS, *korn wɔ'lɪs*, CHARLES, Marquis, of (1738-1806), a British soldier and statesman, whose surrender at Yorktown in 1781 virtually ended the Revolutionary War. On the outbreak of the struggle he sailed for America with his regiment, although he was opposed to the war. He took part in the Battle of Long Island and afterward pursued Washington through New Jersey; but a part of his army was captured at Trenton, and he himself was defeated at Princeton. The victory of the British at Brandywine was due largely to him, and he fought against General Gates at Camden and General Greene at Guilford. Six months later he was besieged in Yorktown and was compelled to surrender, October 19, 1781. In 1786 Lord Cornwallis went to India as commander in chief and Governor-General, invaded Mysore in 1791 and obliged Tippu Sahib to surrender much territory. On his return to England he was created a marquis and appointed lord-lieutenant of Ireland, and again in 1805 he became Governor-General of India.

COROLLA, in a typical flower the inner of the two sets of floral leaves. It is the part made up of the petals, and is the part that is usually beautifully colored. See *FLOWERS*.

CORONA, *ko' ro' na*, a term used in astronomy, botany and architecture. In all of its uses it shows its derivation, for it comes from the Latin for *crown*. In astronomy a corona is a crown of light encircling the sun, which is visible briefly during total eclipses. In botany the term refers to an appendage between the corolla and stamens of flowers like the narcissus. In architecture the corona is the upper projecting portion of a cornice.

CORONADO, *ko' ro nah' doh*, FRANCISCO VASQUEZ (about 1500-1549), a Spanish ex-



plorer whose name is connected with the search for fabled golden cities. In 1535 Coronado journeyed to Mexico, where he became a high official by marrying the daughter of the royal treasurer of New Spain. He arrived there in time to hear wonderful tales of seven rich cities reputed to have been discovered by a Spanish monk, and in 1540 he led a band of Spaniards and native Indians in search of these stores of wealth. The expedition discovered the Grand Canyon of the Colorado and went as far north as the boundary between Nebraska and Kansas, returning to Mexico in 1542.

CORONER, one of the most important civil officers in a county. It is his duty to investigate the cause of deaths when the cause is not attested by physicians or when death occurs under suspicious circumstances. When death results from a fire he may investigate any suspicious circumstances connected with the origin of the fire. He is assisted in his investigations by a *coroner's jury* of six men, who decide whether persons suspected of wrong-doing in connection with deaths shall be held for grand jury investigation or for trial. In most states the coroner acts as sheriff when there is a vacancy in that office.

CORONET, a special form of crown, which princes and nobles wear on ceremonial occasions. In England the rules concerning coronets are rigidly observed. That of the Prince of Wales has a single instead of a double arch, differing in this one particular from the royal crown; a ducal coronet bears on its rim eight strawberry leaves, and that of a marquis four strawberry leaves and four silver balls. There are other forms for an earl, viscount and baron. The coronet is used as a symbol of nobility in the following lines from Tennyson:

Kind hearts are more than coronets,
And simple faith than Norman blood.

COROT, *ko' ro'*, JEAN BAPTISTE CAMILE (1796-1875), a French artist, one of the most famous of the Barbizon school (see BARBIZON PAINTERS). Corot painted large sacred pictures, such as the *Flight into Egypt* and the *Baptism of Christ*; but his most characteristic and successful work was in landscape. His woodland scenes, painted for the most part at dawn or twilight, in a scheme of pale greens and silvery grays, show a singularly subtle feeling for this phase of nature, and are undoubtedly among the most important

contributions of the century to landscape art. Among his works are *Dance of the Nymphs*, *View of Narni*, and *Bath of Diana*. There are excellent examples of his work in the Metropolitan Museum and in the Chicago Art Institute.

CORPORAL, *kaw' po ral*, the lowest non-commissioned officer in an army, ranking below the sergeant. He is in charge of a squad comprising seven men, and his duties consist largely in placing and relieving sentinels and in leading his squad in assigned details. He is appointed by the higher command in his company.

CORPORAL PUNISHMENT, the infliction of bodily pain as a mode of punishment. The term is used most commonly with reference to the discipline of children. (The reader will find a discussion of corporal punishment in regard to home training in the article CHILD TRAINING.) For many centuries the belief that the rod has an indispensable place in the school was firmly held, but since the middle of the nineteenth century the evils of corporal punishment have been generally recognized, and to-day in large cities whipping in the schools has been practically abolished, though it still prevails in some rural sections. In many states and provinces corporal punishment in schools is forbidden by law. The modern theory is that whipping tends to antagonize the child and to rouse his lower instincts, and that no real reformation can result when fear alone is stimulated. Furthermore, it is felt that a child should be whipped only by its parents, if at all, and that the liberty to punish by inflicting pain may lead to serious results when administered by an unscrupulous or quick-tempered teacher.

CORPORATION, a company of persons organized under forms prescribed by law to conduct a business enterprise. The law treats it as a single individual, which it really is. The owners are called *shareholders*, or *stockholders*, by virtue of investment of money in the enterprise, but they have no part in the actual management of the business except such influence as they can wield when they meet annually to elect men from their membership to direct its affairs. These men so chosen are called *directors*, and from their number the *officers* to conduct the day-by-day operations are chosen.

A corporation may own land, but the individual members of the corporation have no

rights therem. A corporation may owe money, but the members as individuals are under no obligation to pay the debt. If, however, an individual has not paid up his stock in full, he is liable for the amount unpaid. The corporation is not dissolved by the death or withdrawal of members, or the substitution of other members, stock, or shares, merely pass from one ownership to another. This capacity of perpetual succession is regarded as the distinguishing feature of corporations, as compared with other societies.

A corporation is formed by legislative act, more and more generally in accordance with standard laws, providing a certain set of steps for incorporation.

Classes of Corporations. Corporations are divided into two main classes, public and private. *Public* corporations are those created for government purposes, such as corporations of states, counties, cities, villages, or incorporated official boards of officers, as a park board. Of *private* corporations, there are four classes:

1 Corporations for the pecuniary profit of individual members. The basis is a capital fund engaged in commercial enterprise. Shares of stock are held by stockholders. Such corporations are regulated in the United States by statutes, which designate the relations and privileges of the corporation. Such corporations are organized and chartered for specific purposes and cannot transact business other than that for which they are organized. Examples are railroads, telegraph and telephone companies, insurance and banking corporations. The profits are divided pro rata among the stockholders.

2 A corporation not organized for profit. In such a corporation there is no stock and no capital. Examples are social, artistic, scientific, religious and professional societies.

3 Corporations for mutual aid and relief. The first object is the element of personal membership and benefit, the division of profit is a secondary consideration. Examples are building and loan associations, cooperative societies and lodges of various kinds. Such corporations are generally under state control.

4 Incorporated trusts. Such corporations have a fund set apart for some special purpose, held usually by a board of trustees. Examples are colleges, hospitals and charitable associations.

Why Corporations Exist. Partnerships are formed that two or more men may combine their capital and services in a small business; corporations are partnerships on a large scale. There may be hundreds of partners in a corporation, or even thousands;

they are not known as partners, but as *stockholders*. Great enterprises are possible because many people join in providing very large capital. More safeguards must be thrown around investors in incorporations than in partnerships, because individual members cannot participate in the handling of its affairs. A corporation is beneficial if it does not grow so strong and powerful that it is able to control the commodity in which it deals; if it becomes monopolistic it may become an evil. This feature of corporations is described in the article **TRUSTS**.

CORPORATIONS, BUREAU OF. See **FEDERAL TRADE COMMISSION**.

CORPUS CHRISTI, TEX., the county seat of Nueces County, is situated on Corpus Christi Bay, at the mouth of the Nueces River, 200 miles southwest of Galveston, on the Southern Pacific, Missouri Pacific, and Texas-Mexican railroads. The city has cotton compresses and cottonseed oil mills, and manufactures caustic soda, basic alkali, concrete pipe and tile. There is a municipal airport and Corpus Christi College, and the harbor is adequate. Population, 1930, 27,741.

CORREGGIO, kor red'jo (1494-1534), the popular name of **ANTONIO ALLEGRI**, a famous Italian painter, born at Correggio, near Modena. Correggio is unrivaled in his handling of light and shade, in the grace and rounding of his figures and in the beauty of their expression. Among his best pictures are *Night*, *Saint Jerome*, *Marriage of Saint Catharine*, the *Penitent Magdalene*, the altar pieces of *Saint Francis*, *Saint George*, *Saint Sebastian*, and several madonnas. See **PAINTING**.

CORRELATION, in pedagogy, the natural relation which different subjects of learning bear to one another. The principle of correlation was recognized by Pestalozzi, Froebel and Herbart, each of whom regarded it as an important law in education. For a time correlation was greatly neglected by educators, but it has recently been recognized again and given a prominent place in all systems of primary and secondary instruction. Correlation considers the relation of each subject to other subjects; as the relation of geography to nature study, history to geography, etc.

CORRESPONDENCE SCHOOLS. See **SCHOOLS, CORRESPONDENCE**.

CORROSIVE SUBLIMATE, *ko ro'siv sub'l' mate*, or bichloride of mercury, is a

white crystalline solid, a burning poison of great strength and a powerful antiseptic. It is a compound of chlorine and mercury, is soluble in water, and is used to disinfect wounds. Taxidermists also find it useful to protect skins from insect attacks. For remedies in case of poisoning from this chemical, see ANTIDOTE.

CORRUPT PRACTICE ACTS, laws designed to deal with offenses committed in connection with elections to public office. These acts provide for punishment for bribery, treating to intoxicating liquors, exercising improper influence over voters, impersonation of legal voters, swearing to false election returns or incurring too large expenditures.

CORSET, an undergarment worn by women for hundreds of years, varying in style and material with changing vogues, but designed at all periods for the purpose of giving trimness to the figure and support to the body. In the days of our grandparents, a corset was fashioned in two parts, fastened together with hooks at the front and lacing at the back. To preserve a rigid form, it was reinforced with numerous narrow strips of whalebone or steel sewed lengthwise into the fabric. When it was the fashion to appear with slender waists, the corset usually was not only uncomfortable but often a menace to health, for it pressed the organs of the body out of the positions designed by nature, a matter to which medical science repeatedly called attention. Today the old-time corset is worn by a few women who reject new modes, but for them the unyielding parts may be replaced by elastic webbing. The modern successor to the corset is a simpler, yielding garment called a corsette.

CORSICA, *kaw'si kah*, an island in the Mediterranean Sea, 100 miles south of France, famous as the birthplace of Napoleon. It is a possession of France, and is the fourth in size of the islands of the Mediterranean. Corsica is about 110 miles long and fifty-nine miles wide, and has an area of 3,367 square miles. There are fine forests, containing pine, oak, beech, chestnut and cork trees, and the mountain scenery is splendid. In the plains and numerous valleys the soil is generally fertile, but agriculture is in a backward state. The Corsicans, whose number about 300,000, are not a progressive people, and much of their farm work is done

by laborers from Italy. The chief exports are wine, brandy, olive oil, chestnuts, fruit and fish. The chief towns, Ajaccio, the capital, and Bastia, are connected by railway.

Corsica was first colonized by the Phoenicians, from whom it received the name of Cynos. The Romans afterward gave it that of Corsica. From the Romans it passed to the Goths, from them to the Saracens, and in the fifteenth century, to the Genoese, who ceded it to France in 1768. The British gained control of it in 1794, but were obliged to yield it again to France in 1796. Population, 1931, 293,762.

Ajaccio, the capital, is famed as the home of the Bonaparte family. The house in which Napoleon was born is kept as a permanent memorial by the French government. The town is also noted for its coral and sardine fisheries. Population, about 23,000.

CORSICANA, *kor se kah nah*, Tex., the county seat of Navarro County, 163 miles northeast of Austin, on the Saint Louis Southwestern, the Southern Pacific, and Fort Worth & Denver City railroads. There is an airport. There are many oil wells in the vicinity, and the city is a manufacturing center. It has cottonseed oil mills, brick-yards, flour mills, grain elevators and manufactorys of cotton presses and cotton gins. The state asylum for orphans is here. Population, 1920, 11,356; in 1930, 15,202.

CORTES, *kaw'tez*, the name for the law-making body of Spain. See SPAIN, subhead *Government*.

CORTEZ, *kawr tays'*, HERNANDO (1485-1547), one of the greatest of adventures from Europe to America in the period immediately following the discovery of the New World. Cortez's great exploit was the conquest of Mexico; it was inspired by the characteristic Spanish hope of finding gold and treasure.

This intrepid man was born at Medellin, **HERNANDO CORTEZ** Spain. He went to the West Indies in 1504, and in 1518 he set out from Santiago de Cuba with eleven vessels, about 700 Spaniards, eighteen horses and ten small field pieces. He landed on the shore of the Gulf of Mexico, where he caused



his vessels to be burned, in order that his soldiers might have no other resources than their own valor. After meeting stubborn resistance from several tribes near the coast, he was able to go on his way toward the Aztec capital Montezuma, the great Aztec ruler, received him in a friendly spirit and housed the Spanish leader hospitably. Cortez learned of a conspiracy against him and by trickery secured Montezuma as a hostage. The Aztec king died, and the Spaniards were driven from the city with great loss. It was not until the middle of 1521 that Cortez was able to re-enter the city, for the Aztecs fought stubbornly against him. (See MONTEZUMA; AZTEC) In 1528 Cortez returned to Spain, but two years later he was again sent out to Mexico, where he remained for ten years.

GORUNDUM, *ko run'dum*, a compound of aluminum and oxygen, in hardness next to the diamond. There are several varieties, ranging from the transparent colored forms, the amethyst, ruby, sapphire, etc., to a coarse variety known as emery (which see). The colored varieties are found chiefly in Burma, Ceylon and China, and the name is derived from the Hindu word *kurand*. Corundum is four times heavier than water.

CORYZA, the medical name for the common cold. See COLD, COMMON.

COSMETICS, *koz met'iks*, a general term for a variety of liquids, creams, pastes and powders used to beautify or rejuvenate one's appearance. They include tonics, bleaches and dyes for the hair, massage, cleansing and vanishing creams for the skin, powders and rouge, and preparations for the removal of superfluous hair. Most of the preparations found on the market are harmless, but a good many are fraudulent. Special care should be taken in the selection of dyes for the hair, as many cases of poisoning have resulted from their use. Health specialists maintain that sensible living and cleanliness are preferable to cosmetics as beautifiers, but manufacturers of these preparations continue to prosper.

COSMIC RAYS. The word *cosmic* relates to the universe, and signifies something universal. Cosmic rays are electromagnetic radiations released in outer space at unknown but tremendously far distances from the earth as a result of creation of matter in what may be new stellar universes in process of formation. They are the most powerful of all known electromagnetic radiations,

with the greatest penetrating power, shortest wave-length and highest frequencies. They possess a frequency per second estimated at 100 billion billion, infinitely beyond the profoundest comprehension of the mind of man, their wave-length is believed to be about five-trillionths of a centimeter (a centimeter is one-hundredth of 39 $\frac{3}{8}$ inches), they are powerful enough to penetrate eighteen feet of lead, more than twenty times as far as the penetrating power of gamma rays, the most powerful rays of radioactive energy.

Cosmic rays beat upon the earth from all directions in a ceaseless bombardment. From what is so far known of them the most important fact seems to be that they offer proof of a continuously building up of the universe. Their discovery is due to studies by Dr. R. A. Millikan, the renowned physicist of the California Institute of Technology at Pasadena.

COSMOS, *koz'mos*, a group of flowering plants found in Mexico, a few species of which are now grown in the United States and Canada. One of the popular forms is bushlike, sometimes reaching a height of ten feet. It blooms in the fall, sometimes as late as November, and bears pink, white or crimson flowers, with yellow centers. Another species, blossoming in late spring in the Southern states, bears flowers of a rich orange-yellow or sulphur color. It grows to a height of four feet or less. It thrives in a sandy soil not too rich. It may be transplanted into gardens from indoor seed boxes.

COS'SACKS, a class of people who were regarded as a distinct military division of the Russian population under the czars. They lived in the southern and eastern portions of European Russia, and held their lands by military tenure, being liable to service for life. Writers are not agreed as to the origin of this people and of their name, but they seemed to differ from the Russians more in their manner of life than in blood and lineage. Originally their government formed a kind of democracy, at the head of which was a chief, or *hetman*, of their own choice. That democracy gradually disappeared under Russian domination.

In the World War the Cossacks maintained all the traditions of their past, but the conflict marked their doom. When the Soviet government seized power, the Cossacks fought its armies unsuccessfully, their

strength waned, and their prestige was lost. The once powerful community was given no consideration in the violent social upheaval, it had been a Cossack boast that for centuries they had been the proudest and most valiant soldiers of the czar, but this distinction was now wiped out, and they suffered the levelling that was the fate of the peasantry of all Russia.

COSTA RICA, *ko'sta re'ka*, the southernmost republic of the Central American states, excepting Panama, which is now classed as a division of Central America and itself a republic. The area is 23,000 square miles, nearly that of West Virginia. The population in 1934 was 551,500. Spanish is the language of the country (see DEMARCA-TION, LINE OF); the religion is Roman Catholic, but there is absolute liberty in religious matters.

The country is rich in agricultural resources, though traversed by a mountain range which is a link in the system extending through both American continents. There are three climatic regions, due to the mountains. Below 3,000 feet elevation is a hot zone; from 3,000 feet to 7,000 feet is a temperate climate, and above 7,000 feet is a decidedly cool region. On the whole, Costa Rica is healthful. The agricultural products, in order of importance, are coffee, bananas, cacao, sugar cane, rice, potatoes and tobacco. Gold and silver are mined in constantly increasing quantities. The distilling of liquor has been for years a government monopoly.

There are 6,500 factories, consuming the products of the country, 415 miles of railroad, 205 telegraph offices and 211 post offices.

Costa Rica was discovered by Columbus in 1502, and was first colonized in 1532 by the Spaniards. Until 1821 it was part of the Spanish province of Guatemala. After unsuccessful attempts to form a Central American Federation, and other vicissitudes, it became independent in 1848, and formed a constitutional government, which has been amended several times. By the election law of 1913 universal manhood suffrage was adopted. The President of the republic is elected for four years. The law-making power is vested in the Constitutional Congress, of one house, made up of forty-three members. The capital city is San José (which see). **CENTRAL AMERICA**.

COTES, SARA JEANNETTE (1862-), a Canadian author, born in Brantford, Ontario, and educated at the Collegiate Institute there. Her maiden name was **SARA JEANNETTE DUNCAN**. She began her career as a school teacher, but gave that up for journalism. Her first series of letters were descriptive of the Cotton Centennial Exposition, New Orleans. Afterwards she became a member of the editorial staff of the *Washington Post*, and later returned to the *Toronto Globe*, where she wrote under the pen name of "Garth Grafton." She made a tour of the world, writing letters for a syndicate of American and Canadian newspapers. Some of her best known works are *A Social Departure*, *How Orthodocia and I Went Round the World by Ourselves*, *The American Girl in London*, *A Daughter of To-day*, *Vernon's Aunt*, *The Simple Adventure of Mem Sahib*, *The Story of Sonny Sahib*, *His Honor and a Lady*, *Those Delightful Americans*, *The Pool in the Desert*, *The Imperialist*, *Burnt Offerings*, *The Consort* and *Curderille of Canada*.

COTOPAXI, *ko toh pak'se*, the most remarkable volcanic mountain of the Andes, in Ecuador, about sixty miles northeast of Mount Chimborazo. Its altitude has been estimated at 19,613 feet. It is the most beautiful of the great summits of the Andes, and is almost a perfect cone in shape. Several eruptions have occurred.



OTTON, a plant of the mallow family, whose fibers provide the civilized world with a large portion of its clothing, and whose products are utilized in countless ways for the comfort and happiness of mankind. Cotton would seem to have been especially created by Mother Nature for the welfare of the human race, and a world without it would lack the commonest necessities of life. This fact has been stated in a series of familiar pictures by Frank G. Carpenter, in his interesting volume *How the World Is Clothed*:

"There is no other plant that comes so close to civilized man, and none which we use so



COTTON

1. Shipping Cotton
2. Cottonseed

4. Cotton Plant
5. Cotton Oil

6. Cotton Fiber
7. Boll Open

9. Cottolene
10. Spinning Frame

11. Loom
12. Gin and Press



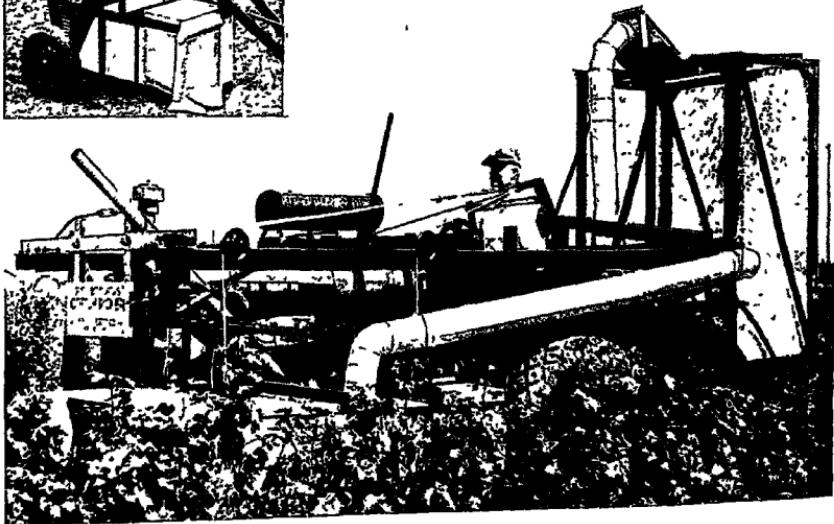
THE OLD ORDER IS PASSING

The traditional method of cotton-picking throughout the cotton belt will gradually give way to the machine age. Below are views of the first successful mechanical picker, the invention of Rust Brothers, perfected after twenty years of labor.



Keystone

Ewing Galloway



much every day of our lives. We go to sleep between cotton sheets, resting our heads on feathers inclosed in cotton pillow slips. We step out in the morning upon a cotton rug, pull cotton stockings over our feet, and dress our bodies in garments made largely of cotton. If, in our hurry, we burst off a button, we sew it on with cotton thread, and then, having put on our shoes, tie them tight with cotton strings. We may wash our faces with soap made from the oil of the cottonseed, and dry them with a cotton towel. And so it goes on throughout the day. We have cotton before us in one shape or another almost every hour until, when tired out, we seek our rest; and then it is this cool white fiber that soothes our fatigue and gives us pleasant dreams."

Not only is man dependent on the plant for much of his comfort and happiness, but he finds that cotton is absolutely indispensable to him when he goes to war. The fate of every army in the World War was bound up in the cotton supply. Guncotton (which see), one of the most important explosives, is made from cotton wool, and numerous chemicals are produced from cotton pulp. Thousands of tons of cotton are used in the manufacture of rubber tires, tubing, percussion shields, etc., and miles of fiber go into the making of bandages, stretchers and hospital bedding. Cotton forms an indispensable part of the equipment of armies and navies, and even the waste is used in cleaning firearms and big guns. See COTTON-SEED PRODUCTS.

Distribution and Varieties. The cotton plant originally grew in the tropics, but cultivation has extended its range to about the thirty-fifth parallel on each side of the equator, with the most productive regions lying between 20° and 35° north latitude. In this section are produced the cotton crops of the United States, Northern India and Egypt, and these three countries together produce about nine-tenths of the world's supply.

Of the several varieties cultivated for the market four stand out prominently. They are the *sea-island*, the *Egyptian*, the *Peruvian* and the *upland*. The first named has the longest, finest and silkiest fibres, with an average length of 1.61 inches. The stalk of this variety reaches a height of twelve feet or more. The plant can be grown only upon low lands, and takes its name from the fact that it was first raised on islands off the coast of South Carolina, Florida and Georgia. Egyptian cotton, which is a variety of sea-island, is imported into the United

States in considerable quantities, as it is especially suited to the manufacture of goods requiring a smooth finish and is less expensive than sea-island cotton. Peruvian cotton, also imported into the United States, possesses a rough, strong fiber, something like that of wool. It is well adapted to mixing with wool and is used in the manufacture of underwear and hosiery.

Upland cotton is the most widely used and the most abundant of all varieties. Its fibers are on the average slightly less than an inch in length, and the stalk reaches a height of from two to four feet. Because it is the most important variety cultivated in Southern United States, from which comes the bulk of the world's supply, it is described in some detail in the following paragraphs.

Cultivation and Harvesting. The cotton belt extends from Texas to North Carolina. After the land is well plowed, the usual method is to bed up the ground in rows from three to four feet wide. The seed is dropped in the center of these rows, five or six seeds at a time, either in narrow furrows or in holes about a foot apart. As more than one plant every twelve inches is not considered advisable, the plants are thinned out after two week's growth. Planting commences about March 1 in Southern Texas and continues to the end of May in the Piedmont region of North Carolina and other sections as far north.

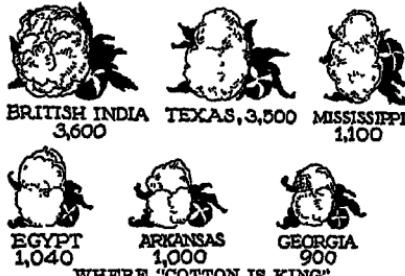
Soon after the plants are above ground they put forth green leaves and peculiarly-shaped buds called *squares*, which blossom into delicate white flowers when the stalks are a foot or so in height. The sunlight soon turns the white of the blossoms to pink, and about the third day the flowers fall to the ground. They are succeeded on the stalks by tiny green bolls, the parts containing the cotton fiber. Bolls are susceptible to the attacks of the malignant boll weevil (which see), whose ravages cause great loss every year.

After six or eight weeks the ripened bolls burst open and are ready for picking. Since only a portion ripen at the same time, there must be several picking times for the field. Formerly the picking was all done by hand labor, but successful cotton-picking machines have been invented and are in use in large fields. They save considerable expense in harvesting the crop. When the cotton is picked it is sent to the gin house, where it

is ginned, or separated from the seeds. The fiber is then placed in presses and pressed into bales of 500 pounds each. These are bound with iron hoops, when they are ready for shipment.

Cotton Products. The most important of these are suggested in the opening paragraphs, and the processes by which the fiber is converted into cloth are described in the articles SPINNING and WEAVING. In addition there are numerous products derived from the seeds (see COTTONSEED PRODUCTS).

Cotton Statistics. The annual crop for the United States ranges between 10,000,000 and 15,000,000 bales of 500 pounds each. Texas is always first among the states in the annual crop, ranging from 2,750,000 to 4,307,000 bales; the last-named figure is that for its heaviest crop (1932). Second honors in production fluctuate greatly. Oklahoma, Arkansas, Mississippi, Alabama, or Georgia occupies second place from year to year. Besides these states, those that produce cotton in large quantity are Louisiana, North Carolina, South Carolina, and Tennessee. The yield in Florida averages not more than 25,000 bales. The entire cotton acreage varies from 28,000,000 to 42,000,000, but both acreage and crop decreased sharply under the cotton control law of 1933, which proved a temporary expedient.

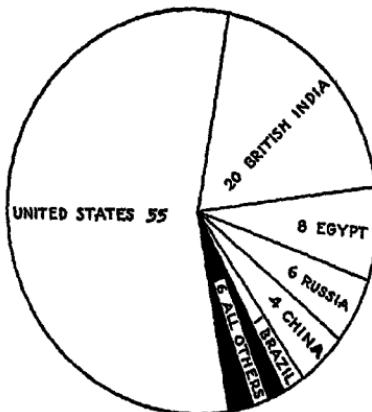


WHERE "COTTON IS KING"
Annual production is given in thousands of bales.

The relative importance of cotton countries and states is shown in the accompanying diagram. There are about 157,000,000 cotton-consuming spindles in the world, of which about 31,000,000 are in the United States. About two-thirds of these are in the cotton States, Massachusetts having yielded its former leadership in cotton manufacture.

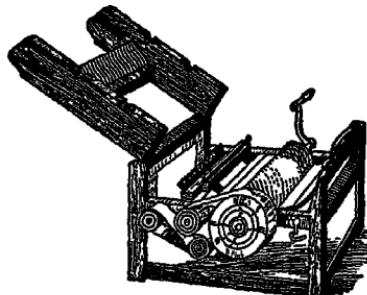
History. Cotton has been used since about the eighth century B. C. It was known to the Egyptians, the Greeks and the Romans, and

its cultivation was introduced into Europe by the Mohammedans during the Middle Ages. The European cotton is probably a native of India, but the plant is also native



PROPORTION OF WORLD'S SUPPLY OF COTTON CONTRIBUTED BY EACH COUNTRY

to America. When the American continents were discovered the inhabitants of Mexico and Peru had attained a good degree of skill in raising cotton and manufacturing it into cloth. The planting of cotton began in the Southern states soon after the settlement of the older colonies, but the expense of separating the fiber from the seed was so great that cotton was not a profitable crop. In the latter part of the seventeenth century the



FIRST COTTON GIN

invention of the power loom and the mule jenny for spinning so increased the facilities for manufacturing cotton goods that enough cotton could not be raised to supply the demands of English manufacturers. In 1793 the cotton gin was invented by Eli Whitney

Outline on Cotton

- I. VARIETIES
 - (1) Long fiber or sea island cotton
 - (2) Short fiber or upland cotton
- II. WHERE RAISED
 - (1) United States
 - (a) Sections
 - (2) Foreign Countries
 - (b) Names
- III. PLANTING
 - (1) Methods
 - (2) Season
- IV. CULTIVATION
 - (1) Soil
 - (2) Dry season, to mature
 - (3) Temperature
- V. HARVESTING
 - (1) Time
 - (2) How picked.
 - (3) Sent to gin house
- VI. SEAPORTS, RAW MATERIAL
 - (1) United States
 - (2) Foreign
- VII. FACTORIES
 - (1) United States
 - (2) Foreign Countries
- VIII. PRODUCTS
 - (1) Cloth
 - (2) Cottolene
 - (3) Fodder and Fertilizer
- IX. HISTORY AND GROWTH OF COTTON INDUSTRY

Questions on Cotton

When and how are cotton seeds sown? How is cotton cultivated?

How long after the flowering has commenced do the seeds open?

How is cotton harvested? How is it separated from the seeds?

How did the invention of the cotton gin affect the production of cotton? Who invented it?

What is the weight of a bale of cotton?

Which is the oldest cotton-growing country? Who introduced cotton into Europe?

Name the chief cotton-producing countries

Where and when was cotton first planted in the United States?

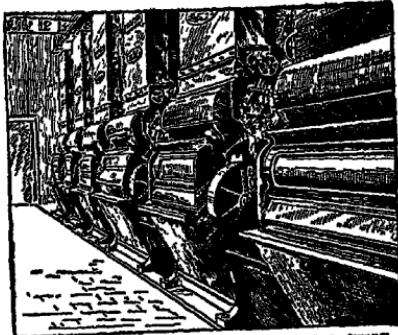
(see COTTON GIN; WHITNEY, Eli). This machine enabled one man to do more in separating the cotton from its seeds than a hundred men could accomplish by hand labor, and it revolutionized the cotton industry. The first exportation of cotton, consisting of eight bags, weighing 1,200 pounds, was from Virginia in 1784. In 1791 the United States furnished less than one-sixth of one per cent of the cotton importation of Great Britain, a century later its crop was sixty per cent of the world's supply. The increase was from 8,839 bales weighing two hundred twenty-five pounds each to 9,534,700 bales weighing 500 pounds each.

When Alexander Hamilton wrote his great "Report on Manufactures," in 1791, he referred to certain branches of the textile industry as already established; yet at that time there was but one cotton factory where spinning was carried on by water power, and that factory had been established less than a year and had only seventy-two spindles. Although some progress was made during the next twenty years, it was not until the War of 1812 cut off foreign supplies that the cotton manufacture was truly "established." During every decade, not even excepting that which included the Civil War, there has been an increase in the number of employees and in the quantity and value of the goods manufactured. The census of 1850 showed a total value of products of \$61,869,000. In 1860 the value had risen to \$115,681,000; in 1870 to \$177,489,000, but a large part of the increase was due to the inflation of the currency. In 1890 the value was \$267,981,000, in 1900, \$339,200,000, and in 1910, \$630,615,000, ten times the product of 1850, and by 1930 the value of cotton products had grown to over \$1,400,000,000. It was the first, the largest, and most typical factory industry in the country, and still retains a position not far from the top.

COTTON, JOHN (1585-1652), a Puritan clergyman and scholar, born at Derby, England. He was tutor at Cambridge, had a charge in Lincolnshire about 1612, and when summoned to appear before Laud in 1633 because of his Puritan views, he fled to Boston, New England, and preached there till his death. Cotton was the author of a catechism, forms of prayer and other works, and in a controversy with Roger Williams he defended the right of civil authority to interfere in religious matters.

COTTON-BOLL WEEVIL. See BOLL WEEVIL.

COTTON GIN, a machine for separating cotton fiber from its seeds. The name is a corruption of *cotton engine*. The cotton gin was invented by Eli Whitney in 1793, and because it made the cotton industry vastly more profitable and greatly extended it, it was directly responsible for the growth of negro slavery in America. The original machine consisted of a wooden cylinder, into which were fastened strong wire hooks resembling the teeth of a saw. The points of these hooks passed between vertical wires held by a frame, and as the cylinder revolved, the teeth drew the fiber between the wires and let the seed fall to the ground. The cylinder was afterwards replaced by saws operating on the same principle. A modern gin contains seventy saws and will clean 5,000 pounds of cotton in twelve hours. By diligent labor it was possible for one person to separate the seeds from one pound of fiber in a day by hand. See COTTON; WHITNEY, ELL.



BATTERY OF MODERN COTTON GINS
(For illustration of the first gin, see article Cotton)

COTTONSEED PRODUCTS. The most important of the products derived from the seed of the cotton plant is a yellow oil. This is extracted by pressure after the seeds have been freed of fibers, bits of lint and hulls. The oil is employed in the manufacture of cottolene, which is used for lard; it is also a substitute for olive oil, and has a place in the manufacture of soaps. About 290 pounds of crude oil may be extracted from one ton of cottonseed. The production of the oil is an important industry in Southern United States. The annual output of the entire country in recent years is over 4,000,000 tons.

Over 2,000,000 tons of cottonseed cake and meal are also produced annually in America. A hard, dry cake remains after the oil has been pressed from a mass of seeds, and when ground this cake forms cottonseed meal. It is an excellent stock food, and when mixed with acid phosphate it has value as a fertilizer. The hulls of the seeds are also used as stock food, and the fine pieces of lint (linters), which cling to the seeds in the ginning process, are used in the manufacture of low-priced yarns, upholstering, wadding, etc. Another by-product is sludge, which settles at the bottom of oil tanks. It is used in the manufacture of soap.

COTTONWOOD, a tall, quick-growing tree of the poplar family, so called because the seeds are borne in green balls which are filled with a white, cottony mass. In May these balls burst open, and their fluffy contents are widely scattered. The cottonwood is distributed through the Eastern and Central United States, especially along the banks of streams. In Canada it grows from Quebec to the North West Territories. The bark is gray-brown and rough, the leaves tapering and shiny, and the flowers are borne in catkins that fall in the spring. Cottonwood is not a strong wood, but is useful for making packing cases, barrels, woodenware and pulp. In cities the tree provides delightful shade, and may live to be seventy-five years old, but in exposed places in country districts the brittle wood cannot stand against the winds, and is short-lived.

COTYLEDON, *kot i le'dun*, the immature leaf of a seedling. Those plants which bear one seed-leaf, like grasses and grains, are called *monocotyledons*; those which produce two seed-leaves, like the bean, are *dicotyledons*. These two classes make up the great group of flowering plants. If a bean is soaked, freed from the skin and split, its two cotyledons may readily be seen. After the bean seedling rises above the ground the cotyledons appear as two thick leaves, which gradually wither and fall off. They are followed by true leaves. In the grains the cotyledon does not push out of the seed, but forms an absorbing organ which serves to feed the growing plant germ. The cotyledons of the pea, horse-chestnut and various other dicotyledonous plants of that type also remain inside the seed coat and underground, but those of the squash and pumpkin develop as temporary green leaves above ground.

COUGAR, *koo'gur* See PUMA.

COUGH, *koff*, a contraction of the muscles which control breathing, caused by irritation of the air passages or by nervousness. While one generally coughs involuntarily, the action may be controlled by proper training. Coughing is a prominent symptom of cold on the chest, bronchitis, tuberculosis, pneumonia and catarrh of the throat. The old remedy was to take a "soothing medicine," which usually contained opium, but physicians today warn against such preparations. In tuberculosis sanitariums fresh air has been found a great aid in alleviating coughs, and the patients there are trained to refrain from coughing except when to cough brings up mucus and clears the air passages. A cough caused by nervous irritation can only be cured by the exercise of will power. The ordinary cold on the chest can often be helped by means of steam inhalation, hot and cold sponging of the chest, and the use of a cold compress. Any serious case of coughing should have the attention of a physician. See COLD.

COUNCIL BLUFFS, IOWA, founded as Kanesville in 1855 by the Mormons and given its present name in 1868, is the county seat of Pottawattamie County. It is four miles from Omaha, across the Missouri River, and is two and one-half miles east of that stream. Seven trunk line railroads enter the city—the Chicago, Burlington & Quincy, the Chicago Great Western, the Chicago & Northwestern, the Chicago, Milwaukee, Saint Paul & Pacific, the Chicago, Rock Island & Pacific, the Illinois Central, the Union Pacific, the Wabash, and the Kansas City, St Joseph, & Council Bluffs. There are large stockyards, grain elevators, flouring mills and dozens of diversified factories; the city is one of the largest agricultural implement centers in the world. There is a municipal airport and street railway connecting with Omaha. The city has twenty-five parks, embracing more than 1,000 acres.

The town received its name because near its site Lewis and Clark conferred with the Indians in 1804. Population, 1930, 42,048.

COUNT, a title of nobility in some European countries, corresponding to that of earl in Great Britain. Though Britain does not recognize the title, it gives the title *countess* to the wife of an earl.

COUNTERFEITING, *koun'tur fit'ing*, fraudulently producing an article in imitation

of another, for the purpose of inducing the use of the false article for the genuine. The term is most commonly applied to the imitation of money. The offense is dealt with by national statutes, and it constitutes a crime punishable by fine and imprisonment, the punishment extending to as much as twenty years in prison and a fine of \$10,000.

COUNTERPOINT, in music, the adding of other melodies to a given melody or theme. The added melodies are independent of the original theme in movement, but related to it by certain rules. When a single part is added, the result is known as *two-part counterpoint*. When two parts are added, the result is *three-part counterpoint*. When the notes of the added parts are of the same value as corresponding notes in the original melody, the composition is known as *simple counterpoint*, and when more than one note of the added part are made equivalent to one note of the original melody the resulting composition is called *florid counterpoint*. The term is sometimes used synonymously with harmony. The name arose from the early system of notation, in which points were used for notes; hence one point was set opposite another point.

COUNTER-REFORMATION. As the Reformation spread, the Roman Catholic Church attempted to counteract its influence by adopting certain measures to check its growth in those countries where it had already gained a hold, to prevent its further spread and to abolish abuses that had grown up in the Church. To these measures has been given the name of Counter-Reformation. The question of the reform of abuses had been receiving much attention in the Church previous to the beginning of the Reformation, but it was not until the Council of Trent (1545-1563) that any effective work was done toward this end. This council formulated a creed and discipline which is practically that of a modern Church, and which did away with the most flagrant abuses. The attempt to check the spread of Protestantism led in Italy and Spain to the Inquisition. In these two countries Protestantism was easily uprooted, because it had never had there more than a feeble existence. In Bohemia it was abolished only by means of the Thirty Years War, and in a number of other countries, particularly in the Netherlands, the attempt to replace it with Catholicism led to serious wars. See REFORMATION.

Outline on the County

- I. MAP OF COUNTY
- II. DESCRIPTION
 - (a) Size
 - (b) Number of townships
 - (c) Boundaries
 - (d) Position in state
 - (e) Physical features
 - (1) Surface
 - (2) Lakes
 - (3) Rivers
- III. GOVERNMENT
 - (a) County officers
 - (1) How elected
 - (2) Terms of office
 - (3) Duties of each
 - (4) Salaries
 - (b) County buildings
 - (c) Taxes
 - (1) How levied
 - (2) How collected
 - (3) How applied
- IV. INSTITUTIONS
 - (a) Penal
 - (b) Charitable
 - (c) Educational
 - (1) Public
 - (2) Private
- V. INDUSTRIES
 - (a) Agriculture
 - (1) Leading crops
 - (2) Markets
 - (b) Manufactures
 - (1) Leading articles
 - (2) Markets
 - (c) Mining
 - (1) Leading products
 - (2) Markets
 - (d) Transportation
 - (1) Rail
 - (2) Water
- VI. COUNTY SEAT
 - (a) How and when located
 - (b) Reason for present location
 - (c) Rank among county's cities and towns
 - (d) Distance from other cities in state
 - (e) Industrial life
- VII. HISTORY
 - (a) When settled
 - (b) When organized as county
 - (c) Famous men produced
 - (d) Events which were notable

COUNTERSIGN, a private signal, word or phrase given to soldiers on guard, who are ordered to let no man pass unless he first gives that sign. The term also refers to the signature of a secretary or other official to a document signed by another. Such countersigning is for the purpose of attesting that the document is authentic.

COUNTY, a word of European origin, referring originally to a district governed by a count or earl, but now known as a political division of a state or province. It is composed of from about twelve to twenty or more townships. Each township in most states sends one man, called a supervisor, or commissioner, to a county legislative board called the board of supervisors, and all citizens of each township participate in county government and support it with their taxes. In turn, the county sends representatives to the state legislature, and all people in the county pay taxes for the support of the state government. The town in the county which is the seat of its government is called the county seat.

The outline which appears on this page is suggested as the basis for an essay on the study of any county.

COUNTY AGENT. See **FARMERS' INSTITUTE**.

COURLAND, *koor'land*, formerly a province of Russia, one of the so-called "Baltic provinces" that set up independent governments in 1917, after the abdication of the czar. When, early in 1918, Russia renounced all claim to the Baltic provinces by the Treaty of Brest-Litovsk, German troops occupied Courland and overthrew the new government. Before the close of the year Germany itself surrendered to the allies, and the German forces thereupon withdrew. In November, 1918, a movement for independence culminated in the proclamation, at Riga, of the Free State of Latvia, which included practically all of Courland, and certain other districts, formerly Russian.

The province was south of the Gulf of Riga and the province of Livonia, east of the Baltic Sea, and west and north of Lithuania. With an area of 10,435 square miles, it was about the size of New Hampshire and Rhode Island combined. Agriculture, cattle raising and fishing are the chief occupations of the people, who numbered 812,300 when Latvia took possession. The majority of them are Letts. See **LATVIA**.

COURT, a tribunal established for the administration of justice. Its duty is to try and punish persons accused of committing offenses against the State, the public or individuals, and to settle controversies. Courts have existed from remote times and probably had their origin in the executive power possessed by kings or chiefs, or in the power of

Court of Appeals, and under certain conditions may reach the United States Supreme Court. In addition to this system involving the three courts with which the public is most familiar, there are other Federal courts, each having special jurisdiction. The following table presents the facts with respect to all of them:

TITLE	ORGANIZATION	JURISDICTION*
Supreme Court.	A chief Justice, \$20,500, eight associates, \$20,000.	This court has original jurisdiction in all cases relating to ambassadors and other public ministers and consuls, and in those to which a state is a party. It has appellate jurisdiction in all cases originating in the inferior courts, save such as Congress by law shall except. Appeals may be made to it, and writs of error lie to it, from the district courts, from the courts of appeals, and from the supreme courts of the District of Columbia and the territories.
Circuit Courts of Appeals	Ten circuits, to each of which are assigned one Justice of the Supreme Court and from two to five circuit judges, thirty-two circuit judges in all, salary, \$12,500	Appeals from district and territorial courts.
District Courts.	One hundred and three districts, including Alaska, Hawaii, and Porto Rico, each with a district judge, salary, \$10,000	Criminal prosecutions for violation of Federal laws, and cases connected with revenue and postal laws, bankruptcy and admiralty matters. In a general way district courts have jurisdiction in all cases assigned by the Constitution (Article III) to the Federal judiciary, except those cases in which original jurisdiction is imposed on the Supreme Court.
Court of Claims	A chief justice, and four associates, each \$12,500	Over money claims of individuals against the government.
Court of Private Land Claims	A chief justice, and four associates, \$10,000	Decides conflicting claims of title to certain public lands
Court of Appeals District of Columbia	A chief justice, and two associates, each \$12,500	Hears appeals from the supreme court of the District of Columbia.
Supreme Ct. District of Columbia	A chief Justice, \$10,500, four associates, \$10,000	Resembles in jurisdiction other United States district courts
Territorial Courts	Judges appointed for four years	Resembles United States district courts
Admiralty	Courts, Commissioners' Courts, and Courts-martial	

*The supreme court has both original and appellate jurisdiction, the circuit courts of appeals, and the court of appeals for the District of Columbia, have only appellate jurisdiction; the other courts only original jurisdiction.

pardon belonging to priests and other church dignitaries. The systems of courts differ among different modern nations, but their general powers and constitutions are the same, their acts being in most cases independent of all other authority and their decisions being regarded as final in most cases.

United States Courts. These courts, excepting the Supreme Court, are concerned only with cases arising from the violation of Federal statutes. The lowest is the United States District Court; appeals go to the Cir-

State Courts. The courts of the state differ in powers and jurisdiction in the various states. At the foot of the whole system are the *justices of the peace*, who try petty criminal and civil suits. In some states there are *county courts*, which hear appeals from justices and have original jurisdiction in some cases. Next come *circuit courts*, each of which has jurisdiction over several counties and hears appeals from the lower courts. Over all is the *supreme court* of the state, usually a court of appeal only, but occasional-

ly having original jurisdiction. In some states there are slight variations of this system. Cases may be carried from the supreme court of the state to the Supreme Court of the United States, usually in questions involving the interpretation of the United States Constitution.

Courts in Canada. As in the United States, there are two classes of courts, Dominion and local. In the former class there are two courts, the Supreme Court of the Dominion and the Exchequer Court, the members being appointed by the Dominion (Governor-General in Council). The provincial court judges, except justices of the peace and city magistrates, are also paid by the Dominion government, and the judges in each province receive appointment from the Dominion government. The jurisdiction of each court is similar to that of courts of like grade in the United States.

Related Articles. Consult the following titles for additional information.

Admiralty Court	Justice of the Peace
of Canada	Juvenile Court
Court of Claims	Law (with list)
Exchequer Court	Moral Court
of Canada	Probate Court
Judge	Procedure
Judicial Department	Supreme Court
of Canada	
Jury and Trial by Jury	Supreme Court of
Justice, Department of	the United States

COURT FOOL, a name given to the professional jesters who were common at courts during ancient and medieval times. Such persons were known in the time of Philip of Macedon, but they formed a more important part of court life during the Middle Ages than at any other time. The fool dressed in gay colors, with a cap ornamented with bells and surmounted with ass's ears, carried a scepter, usually ornamented with bells, and wore a large collar. The Stuart kings were the last English kings to have court jesters, but at the Russian court such personages existed to the nineteenth century, and Marie Antoinette of France had a jester just before the Revolution. Shakespeare in several of his plays, as *King Lear*, *As You Like It* and *Twelfth Night*, introduces the court fool.

COURT-MARTIAL, *kort mahr'shal*, a court consisting of military or naval officers, for the trial of military or naval offenses. In the army of the United States there are general courts-martial, before which only officers can be tried, and regimental and garrison courts-martial. In the navy summary courts-martial are held for the trial of petty

officers and persons of inferior rating, and general courts-martial for the trial of the higher officers.

COURT OF CLAIMS. Under the American system no citizen can bring suit against the Federal government. To provide an avenue through which justice may be secured Congress established the United States Court of Claims in 1855. Five justices sit in this court, one of whom is designated chief justice; they are appointed by the President for life, or during good behavior. The salary of the chief justice and of each associate justice is \$12,500 per year.

Claims allowed by the court are paid out of Congressional appropriations, always maintained for the purpose. If the amount at issue exceeds \$3,000 an appeal from an adverse decision may be made to the United States Supreme Court.

COURT-PLASTER, black, flesh-colored or transparent silk, varnished over with a solution of glycerine and isinglass and often perfumed with benzoin. It is now used for covering slight wounds, but it is said to have received its name from the fact that at one time the ladies of the court wore it on their faces in patches, to make their complexions appear more brilliant.

COURTSHIP OF MILES STANDISH, a popular poem, written by Henry W. Longfellow and published in 1858. It is a story of Plymouth colony, and is based on a tradition that seems to have a foundation of truth. The chief characters are Captain Miles Standish, John Alden and Priscilla Mullens. The last named was a beautiful girl whose charm won the heart of the sturdy Captain, a widower since the first winter of the struggling colony. Captain Standish was brave when it came to fighting Indians, but timid in the matter of proposing, and he requested his staunch friend John Alden to plead his suit for him. It so happened that John loved Priscilla himself, and Priscilla knew it, and when he tried to plead for the Captain the maid replied, "Why don't you speak for yourself, John?" In the poem the two were married with the blessing of the Captain, but the prose version of the story, which gave Longfellow the basis for his poem, states that Standish never forgave his friend. Longfellow himself was a descendant of the Aldens, and a house built in 1653 by John Alden is still in the possession of a member of the family.

COVENANTERS, *kuv'ən tərs*, a term applied to those people in Scotland who bound themselves by a series of covenants to maintain Presbyterianism in the country. See **COVENANTS**.

COVENANTS, *kuv'ənənts*, a term used in the Bible in several indefinite senses, sometimes with the meaning of *promise*, sometimes in place of *agreement*. Covenants between man and man are frequently mentioned, but special emphasis is laid upon those between God and the Israelitish nation, given through Noah, Abraham and others. This was a pledge of God's blessing upon the Israelites in return for their faith and devotion.

The term was used by the Scottish people to denote associations or bands of persons joined together for mutual support and assistance, either in the maintenance of a principle or in resistance to oppression. Two of these covenants were especially noted, namely, the *National Covenant* of 1638 and the *Solemn League and Covenant* of 1643. The first had for its object the maintenance of the Presbyterian or Reformed religion and grew out of the fear in Scotland that Charles I would introduce the English *Book of Common Prayer* and increase the power of the Scottish bishops. The *Solemn League and Covenant* was a contract entered into between the General Assembly of the Church of Scotland and commissioners in the English Parliament, according to which Scotland was to furnish an army to help the English against Charles I, upon the condition that Presbyterianism be made the established religion in England, Scotland and Ireland. Both covenants were abrogated after the restoration of the Stuarts in 1660, and their adherents were severely criticised and regained freedom of worship only after the revolution of 1688.

COVENTRY, *kuv'ən trē*, ENGLAND, a city in the county of Warwickshire, eighty-five miles northwest of London. It is also the Parliamentary and municipal borough for the county. Coventry is a place of great antiquity. In 1043 Earl Leofric and his wife, Lady Godiva (see **GODIVA, LADY**), founded here a Benedictine monastery, and many religious mysteries and pageants were acted before the king in the fifteenth century. Henry VIII destroyed this abbey and the ancient walls which surrounded the city. To-day there are several fine churches, Saint

Michael's being the largest parish church in England. Coventry is a prosperous manufacturing city, and owing to its rapid industrial growth the boundaries have been extended. Its chief manufactures are bicycles, automobiles, ribbons, watches, sewing machines and munitions. Population, 1931 census, 167,046.

COVERDALE, *kuv'ər dālē*, MILES (1498-1568), the first Englishman to bring out a complete translation of the Bible into printed English. At the beginning of the Reformation he was in an Augustinian monastery at Cambridge, but he soon adopted the doctrines of the Reformation and became their very enthusiastic supporter. In 1535 he published his English translation of the Bible, and the Psalms of his translation are still used in the Book of Common Prayer. In 1550 Coverdale was made bishop of Exeter. He held this office until 1553, when, on the accession of Mary, he was thrown into prison. The next year he was released and obliged to leave England, but after the accession of Elizabeth he returned.

COVINGTON, *kuv'ɪng tən*, KY., the second largest city of the state, is one of the county seats of Kenton County, at the junction of the Ohio and the Licking rivers, opposite Cincinnati, and on the Louisville & Nashville, Chesapeake & Ohio, and Cincinnati Southern railroads. The city is connected with Cincinnati by a suspension bridge 2,763 feet long. Newport is a neighbor, on the east. Covington is a residence town for many Cincinnati business men. There are many handsome private dwellings and public buildings, among which are a public library, a fine Federal building, Notre Dame Academy and a beautiful cathedral. There are extensive manufacturing industries, including distilleries, cotton and woolen mills, packing establishments and glass factories. The city was settled in 1812 and was chartered in 1834. Population, 1920, 57,121, in 1930, 65,252.

COWBIRD, or **COW BUNTING**, so called because usually found near cattle, is an American bird of the starling family, which resembles the European cuckoo in that it lays its eggs in the nests of other birds and leaves them to be hatched by the foster parent. While a single bird lays several eggs, it has never been known to deposit more than one in the same nest. The small birds whose nests are used for this purpose do not usually seem

to notice the difference, and the young cowbird, being larger, secures most of the food intended for the true children. Sometimes, however, the yellow warblers and other small birds recognize the presence of the intruding egg and abandon the nest or seal it over and build another upon the top of the old one, rejecting not only the strange egg but all of their own, as well. From its peculiar habit of making no nest, the cowbird is sometimes called the *lazy bird*. There are usually more males than females in a flock.

COWITCH, COW'HAGE, or COW'AGE, the hairs of the pods of certain pod-bearing plants which grow in the East and West Indies. The hairs are stiff and brittle, with finely serrated tips, which enables them easily to penetrate the skin, where they produce an intolerable itching.

COW PAR'SNIP, a large, coarse plant of the parsley family, that grows to a height of from three to six feet and bears handsome leaves and large clusters of small white flowers. Though rather striking in appearance, the cow parsnip becomes a troublesome weed if allowed to grow in damp soil near the water. There are a number of different species, but none is especially valuable, though one or two are used for fodder or as a substitute for celery.

COWPEA, a pod-bearing plant widely distributed in temperate and tropical regions, of value as a forage plant and also because it has the power of renewing the soil. This is due to the fact that it gathers free nitrogen from the air, in the manner of clover. The cowpea shows great variation of habit and appearance, and appears in creeping, bushy and tall and erect forms. It is grown extensively in the Southern United States, where it is fed green to stock and also made into hay and ensilage. Cowpea pods are considered an excellent fattening food for young pigs.

COWPENS, BATTLE OF THE, a battle of the American Revolution, fought in Spartanburg County, S. C., near King's Mountain, January 17, 1781. The English force of 1,100 under Tarleton was opposed by a thousand Americans under Morgan and other partisan leaders. The British army was attacked on both flanks simultaneously, and the whole force, with the exception of 270, was captured or killed. The Americans lost but twelve killed and sixty-one wounded.

COWPER, WILLIAM (1731-1800), an English poet, the author of several beautiful and familiar hymns. He lost his mother when he was but six year old, and was placed at a school in Hertfordshire, from which, on account of rough treatment from one of his schoolmates, he was removed when ten years of age.

He left Westminster School at eighteen and was then apprenticed for three years to a solicitor, and at the expiration of his service he took chambers in the Middle Temple. In 1754 he was called to the bar. The interest of his family procured for him the post of clerk to the House of Lords; but having to appear for examination at the bar of the House, his nervousness was such that on the very day appointed for the examination he resigned the office and even attempted suicide. Soon afterward he became insane, and from December, 1763, to June, 1765, he remained under the care of Doctor Cotton at Saint Albans. The skill and humanity of that gentleman restored him to health, and he went to live in Huntingdon.

Here Cowper became acquainted with Mr. and Mrs. Unwin, in whose house he lived for some time. When Mr. Unwin died, Mrs. Unwin moved with the poet to Olney, where she carefully tended him through a second attack of his malady. In 1776 he commenced a poem on the *Progress of Error*, which he followed by three other poems, *Truth*, *Table Talk* and *Expostulation*. These, with some others, were published in a volume in 1782. One of his friends, Lady Austen, suggested *The Task*, which on its publication in 1785 made Cowper famous. It had a real effect in helping to bring into poetry a spontaneity and a feeling for natural beauty, in contrast to the artificiality of most of the poetry of the eighteenth century. *The Diverting History of John Gilpin*, by which Cowper is perhaps best known, is also due to the suggestion of Lady Austen. The translation of *Homer*, begun in 1784, occupied him for the next six years, and was published in 1791. He removed during its progress from Olney to Weston. In the beginning of 1794 he was again attacked with insanity. Cowper's *Olney Hymns*, published in 1779, include such well-known songs as *Oh! for a Closer Walk with God*, *God Moves in a Mysterious Way* and *There is a Fountain Filled with Blood*.

COWPOX, a disease which appears on the teats of the cow, in the form of eruptions. This is the same disease as smallpox in man, and the fluid from cowpox eruptions injected into human beings gives them a mild form of the disease and protects them from its virulent forms. Milk from diseased cows should never be used as food. See VACCINATION; SMALLPOX.

COWIE, or COWRY, the shell of a small mollusk, which in some parts of Africa and in many parts of Southern Asia has long been used as money. The practice is yet common among inland tribes. The shells vary in value in different localities. The beauty of these shells has given them a place among ornaments, and both civilized and uncivilized nations have always used them.

COWSLIP. In England this name is given to the primrose, a pretty little herb found in pastures and meadows. It has a cluster of buff-yellow, scented flowers, in the midst of a rosette of spreading leaves. In North America the marsh marigold, a large yellow-flowered plant of the buttercup family, is called cowslip. This grows in swampy places, and in early spring its leaves and stems are often gathered for greens. The flowers are a bright yellow. The beautiful plant of the primrose family, known in the Western states as the shooting star, is called the American cowslip, while the Virginian cowslip belongs to the borage family and is known as the bluebell, or lungwort.

COX, JAMES M (1870-), Democratic nominee for President in 1920, a newspaper owner and editor, controlling the Dayton (O.) *News* and Springfield (O) *Press-Republic*. He is an Ohioan, born at Jacksonville, March 31, 1870, was apprenticed as a printer after leaving high school, and by degrees worked his way to influential station. He served two terms in Congress, being first elected in 1910, was elected governor of Ohio in 1913 and twice reelected; he occupied this office when chosen standard bearer of the national Democratic party. In his campaign he visited over thirty states and spoke several times daily to great numbers of people. His home is in Dayton.

COX, PALMER (1840-1924), an American artist and author, known especially as the creator of the "Brownie" pictures and verses. He was born in Quebec, and lived for some time in California, beginning his literary work with contributions to the *Golden Era*.

and other Western papers. In 1875 he moved to New York City, where he commenced his work as illustrator and writer for children's magazines and books. His works include *The Brownies, Their Book*; *The Brownies in Fairyland* and *The Brownies in the Philippines*.

COYOTE, *kt'ote*, or *ki o'te*, the most disliked of all members of the wolf family, is an animal about forty inches long and eighteen inches high. He is sneaking in his habits, is apparently always hungry, and is a constant menace to small domestic animals and poultry in neighborhoods he infests. Few animals are more fleet-footed.

CRAB, the name given to nearly a thousand species of shellfish. Many of them are classed as a food, but they contain slight nutriment, being really little more than a delectacy. Enough of them are eaten to raise crab fishing to the plane of a profitable industry.

The head and breast are united, and the whole is covered with a strong shell. The mouth has several pairs of strong jaws, in addition to which the stomach has its internal surfaces studded with hard projections for the purpose of grinding the food. The liver is the soft, rich, yellow substance usually called the *fat* of the crab. The young crabs throw off their covering at intervals as they increase in size, but after they are full-grown, three or four years at least may pass without a change of this character. The first pair of limbs are not used for locomotion, but are furnished with strong claws or pincers, and the right claw is generally larger than the left. The crab's eyes are compound and are placed upon stalks, which sometimes are over an inch in length.

Crabs generally live on decaying animal matter, though some live on vegetable substances, as the *racer crabs* of the West Indies, which suck the juice of the sugar cane. Crabs inhabit both sea water and fresh water; some live on the land, only going to the sea to spawn.

CRAB APPLE, a tree which bears a small, tart fruit much used in making jellies and preserves. The name is somewhat loosely applied to any apple tree producing a sour, uncultivated fruit, but properly it refers to the wild varieties of the true apple, from

which the latter is produced. The best known crab apple grown in America is the narrow-leaved variety, found from New Jersey to Illinois and Kansas, and south to Louisiana and Florida. Another variety, distributed from Ontario to Michigan and as far south as South Carolina, bears a greenish-yellow fruit of very sweet scent. A very excellent grade of crab apples comes from the Bitter Root Valley in Montana.

CRACOW, or **KRACOW**, *kra'ko* (Polish) or *krah'kou* (German), once the capital of the kingdom of Poland, and later the capital of the Austrian province of Galicia. Since 1918, it has been a part of Poland, and capital of a county of the same name. In historic associations no Polish city or town is its rival. Here, in the six-centuries-old Stanislaus Cathedral, the kings were crowned, and here lie buried the nation's heroes—John III, Sobieski, Kosciusko, Poniatowski, Mieczewicz, and Pilsudski.

Situated on the left bank of the Vistula, which separated it from Russian soil, Cracow was of great strategic importance, both in a commercial and in a military sense. From it spread out the main railway lines running into the heart of Germany and Austria. Its trade, by rail and water, is chiefly in lumber, grain, cattle and salt, the salt mines, eight miles away, being among the largest in Europe. The city's ancient walls, dating from the Middle Ages, have long been torn down; it has modern fortifications, which, however, could not withstand the impact of present-day artillery.

After the dissolution of the Dual Monarchy, Austria-Hungary, in 1918, at the close of the World War, the fate of Cracow remained for some time a political problem. The province of Galicia, of which it was the principal city, was finally awarded by the Peace Conference to ambitious Poland, which found in the results of the war an opportunity to reestablish its independence on a scale comparable to the glory of former days. Cracow is now fifth city in size in the new Poland. Population, 1932, 221,260. See POLAND; WORLD WAR.

CRADDOCK, CHARLES EBERT. See MURFREE, MARY NOAILLES.

CRAIGIE, *kraig'*, PEARL RICHARDS (1867-1906), an English novelist and dramatist, who wrote under the pen name of JOHN OLIVER HOBBS. She was educated in England, though born in Boston, Mass. Her

style was brilliant and she was especially skillful in her handling of dialogue. Among her books are *The Gods*, *The Vineyard*, *Flute of Pan* and *The Dream and the Business*. Her plays include *A Repentance* and *Journey's End in Lovers' Meeting*, the latter written for Ellen Terry.

CRAIK, DINAH MARIA MULOCK (1826-1887), an English novelist, known chiefly for her story *John Halifax, Gentleman*, which has always been very popular and has been widely translated. Among her less generally known novels are *The Ogilvies*, *Olve, A Life for a Life* and *Mistress and Maid*. She also wrote two popular children's stories, *The Little Lame Prince* and *The Adventure of a Brownie*.

CREAKEBERRY. See CROWBERRY.

CRANBERRY, a small, red, acid fruit, first found in Northern Asia and Central Europe, but now domesticated in nearly every temperate zone. Because it grows only on low, swampy land or on peat bogs it is called in some localities *moss berry* or *moor berry*. The berry, when ripe, is globose and is a little more than a quarter of an inch in diameter. The American cranberry has larger berries than the European species and is extensively cultivated in some localities. New Jersey, Wisconsin and the Cape Cod peninsula furnish the greater part of the million bushels harvested yearly in America.

CRANE, a machine for raising and moving heavy weights. The most common form of crane is the ordinary derrick (see DERRICK). The power may be applied to a crane by hand, or to a train of wheelwork by a steam engine or an electric motor. The hoisting engine is in ordinary use for furnishing power for cranes of this sort, where buildings or other structures are being erected. The weight is hoisted by winding a rope or cable around a cylinder. In shipyards, steel mills, locomotive works and other places where heavy weights have to be moved from one part of the yard or factory to another, the traveling crane is employed. This consists of a hoisting device similar to that used on the ordinary crane, with the exception that no jib is used. This device is mounted on a traveling table, which runs on rails supported on the opposite sides of the building, or on a trestle constructed for the purpose. These cranes are usually operated by electric motors. One motor operates the hoisting

machinery, and another operates the machinery by which the crane is moved over the track. Cranes of this pattern are constructed with sufficient power to lift an entire locomotive and carry it from one part of the factory to another where it is set down as lightly as though it weighed but a few pounds.

CRANE, the common name of a number of different species of wading birds, generally of rather large size and remarkable for their long necks and stilt-like legs, which fit them for living in marshes and lands that are frequently overflowed. The food of cranes is partly of vegetable matter, but they also eat insects, worms, frogs,

reptiles, small fish and the spawn of various aquatic animals. They nest among the bushes or in the marshes and lay but two eggs. The cranes spend their summers in the north temperate regions, but on the approach of winter they make exceedingly long migrations to the south.

They feed chiefly in the early part of the day and spend the rest of the time often dozing, standing on one leg, with the head drawn back on the shoulders. Some species are easily domesticated and are regarded as sacred in parts of Japan and India. Some species carry beautiful crests of long, slender feathers, and most of them are noted for the peculiar dances and antics through which they go during courtships. The *demoiselle crane*, found in Central Asia and in winter in Africa, is especially noted for its graceful performances. In North America there are three species, the whooping crane being the largest. The windpipe of this crane is coiled at the lower end into the crevices of the breast bone and is sometimes eight feet in length. This accounts for the peculiar resonance of the bird's cry.



CRANE

CRANE, STEPHEN (1870-1900), an American novelist, born in Newark, N. J. He studied at Lafayette College and Syracuse University and then began newspaper work. While thus engaged, he wrote and published, at his own expense, *Maggie, a Girl of the Streets*, a realistic novel of street and slum life. *The Red Badge of Courage*, which eventually came into wide notice, was written before the author attained his majority. The story deals with a raw recruit in battle, and his first fear on confronting the foe and hearing the whistle of shot and shell are described in a most vivid manner. Crane was able to describe the battle scenes and tactical evolutions in such a way as to deceive the critics, who declared that such descriptions could only have been written by an old veteran. Among his other books are *The Little Regiment*, *On Active Service* and *Whiomville Stories*.

CRANE, WALTER (1845-1915), an English painter and engraver, born in Liverpool. Among his works are *Birth of Venus*, *The Fate of Proserpina*, *Plato's Garden*, *Date Trees on Monte Pincio* and *End of the Year*. Crane is specially known for his drawings on juvenile subjects, among which are *Echoes from Hellas*, *Flora's Feast* and *Queen Summer*. He has made designs for glass windows, tapestries and the like, and was the author of *An Artist's Reminiscences*.

CRANIAL NERVES. See NERVES, CRANIAL

CRANMER, THOMAS (1489-1556), Archbishop of Canterbury, famous for the part he played in the English Reformation during the reign of Henry VIII. In January, 1533, he was appointed Archbishop of Canterbury, and zealously promoted the cause of the Reformation; through him the Bible was translated and read in churches, and monastic institutions were vigorously suppressed. Henry VIII appointed him by will one of the Council of Regency to Edward VI. By the will of Edward VI, his sister Mary was excluded from the crown, and Cranmer upheld the cause of Lady Jane Grey. With others who had been most active in Lady Jane's favor, he was sent to the Tower when Mary ascended the throne. He was tried on charge of treason and condemned to die, but was not executed on that sentence. In 1554, with Latimer and Ridley, he was removed to the common jail on the charge of heresy. Cranmer signed sever-

eral recantations, but he finally said he would retract all his hand had written in fear of death. He was burned at the stake, and when the fire was lighted he thrust his hand into it, saying, "This hath offended: Oh, this unworthy hand!"

CRANSTON, R. I., a town in Providence County, on the New York, New Haven & Hartford railroad. It is a residence place near Providence, of which it was a part until 1754. There are manufactures of cotton goods, tools, machinery, valves, and beer. The town has village libraries, state reform schools for boys and girls, a state prison, an almshouse, an insane asylum and a workhouse. There is a state airport a mile distant, serving this city and Providence. Population, 1920, 29,407; in 1930, 42,911.

CREAPE, or **CREPE**, a crinkled, wiry, transparent stuff, made of raw silk, well twisted and gummed, and commonly dyed black, to be used for mourning garments. It is manufactured in Italy, England and France. Chuna crepe, or *crêpe de chine*, is a soft, white or colored silk fabric, of gauzy texture and wavy appearance, used for ladies' scarfs, shawls, hat trimmings and evening dresses. A woolen fabric made with a crinkled surface is also called crepe, and the name crepe paper is applied to a crinkled paper used for table decorations, napkins, etc.

CRAS'SUS, MARCUS LICIENIUS (114-53 B. C.), a famous Roman, surnamed *Dives* (the rich). He took part with Sulla in the Civil War, and in 71 B. C. he defeated Spartacus (which see) at Rhagium. In 70 he was elected consul, with Pompey as his colleague, but the two shortly came into conflict and were not reconciled until 60 B. C., when Caesar induced them to form with him the first triumvirate (which see). Five years later Crassus again became consul, and, obtaining Syria for his province, he made war on the Parthians, but was defeated and slain.

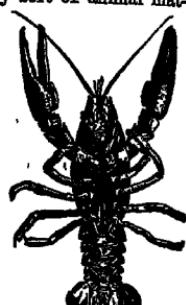
CRAWFISH, or **CRAYFISH**, the name of various crustaceans (see *CRUSTACEA*). In structure they are very like the lobster, and the young are carried under the broad tail of the mother in the same way as with the lobsters. The crawfish inhabits the fresh waters of North America, Europe and the north of Asia, and is common in some of the streams of England, where it is considered an excellent article of food. It lurks under stones or in holes in the banks. Its food con-

sists of small mollusks or fishes, the larvae of insects and almost any sort of animal matter. Some crawfish, by their burrowing habits, injure mill-dams and levees. About thirty species are known in America, where they are often called crabs.

CRAWFORD, FRANCIS MARION (1854-1909), an American novelist, who vividly portrayed life in foreign lands. He was the son of Thomas Crawford, a sculptor, and was born in Italy. Crawford received his education at Concord, N. H., in Trinity College, Cambridge, and at Karlsruhe and Heidelberg. At Rome he devoted himself to the study of Sanskrit, and during 1879 and 1880 was engaged in press work at Allahabad, India. He was selected by the government committee to write the national ode at the centennial of the American Constitution, Sept. 17, 1887. His first novel, *Mr. Isaacs* (1882), was a book of striking and quite unusual merit and at once won for its author popularity. The rich romantic elements in certain of the aspects and contrasts of modern Oriental life were a distinct discovery to worked-out novelists. Among its successors are *Dr. Claudius*, *A Roman Singer*, *Zoroaster*, *The Story of a Lonely Parish*, *Saracinesca*, *The Witch of Prague*, *Paul Patoff*, *Don Orsino*, *Saint Ilario*, *In the Palace of the King* and *The White Sister*. He possessed imagination, originality and vigor, and used a graceful and vivid style.

CRAWFORD, THOMAS (1814-1857), an American sculptor, born in New York. He studied in Rome and became the pupil of Thorwaldsen. His best known works comprise *Orpheus and Cerberus*, *Adam and Eve*, *Hebe and Ganymede*, *Mercury and Psyche* and *The Indian*. He executed important works for the National government and for the State of Virginia. Perhaps his most important work is the statue of *Liberty*, nineteen and a half feet high, which surmounts the dome of the Capitol building at Washington.

CRAWFORDSVILLE, IND., founded in 1822 and made a city in 1865, is the county seat of Montgomery County, forty miles



CRAWFISH

northwest of Indianapolis, on the Cleveland, Cincinnati, Chicago & Saint Louis, the Pennsylvania, and the Monon railroads. The city is the seat of Wabash College (400 students), it has a Carnegie Library and a \$100,000 Y. M. C. A. building. The home of General Lew Wallace, author of *Ben Hur*, was here. Wire, nails, caskets, and ladies' coats are manufactured. Population, 1920, 10,139, in 1930, 10,355.

CRAYFISH. See CRAWFISH.

CRAYONS, pencils in various colors made of clay, plumbago, chalk and other material, such as pigments for colorings. Crayons used in drawings to be photographed are commonly made of a mixture of wax, soap, resin and lampblack. Black crayons are made of the finest quality of charcoal. A kind of *crayon painting* is practised to some extent, the coloring matter in a soft state being rubbed on with the finger. Its chief advantages consist in the facility of its execution and the soft beauty and richness of the coloring.

CREAMERY, *kreem'ury*, or **BUTTER FACTORY**, a factory where butter is made. Creameries are organized on three plans: by the association of farmers of the neighborhood, who build and operate the creamery and share proportionally in its profits; by the formation of a stock company, in which the stockholders are patrons, and by individuals, who build the creamery, buy the milk and sell the butter. Creameries gather both cream and milk and pay for each according to the amount of butter fat it contains, this being determined by a milk or cream tester. The by-product of the creamery is skim milk, most of which is returned to the patrons or is sold. It is taken to the farms and fed to calves or pigs. Dried curd, or casein, is also made from it and is of some commercial importance.

A well-equipped creamery contains apparatus for testing the milk and cream, a tank for receiving the milk, another for holding the cream and a third for the skim milk. The machinery consists of a motor, which is usually a gas engine, the cream separator, churns and butter works. An average-sized creamery will use from 8,000 to 10,000 pounds of milk in a day, and some of the largest have a capacity for making fifteen tons of butter every twenty-four hours. Creameries are in charge of skilled butter-makers, who have usually learned their trade

at agricultural experiment stations or agricultural colleges.

In the United States Wisconsin leads in the output of creamery butter, and in Canada, Ontario and Quebec together produce about nine-tenths of the Dominion's yield. See BUTTER; DAIRYING; MILK.

CREAM OF TAR/TAR, or POTAS'STUM BITAR/TRATE, exists in grapes, tamarinds and other foods. It is prepared from the crystalline crust called *argol*, deposited on the vessels in which grape juice has been fermented. The argol is dissolved by boiling with water, the mixture is filtered and the cream of tartar is allowed to crystallize. The commercial product usually contains a small percentage of calcium tartrate. It is frequently employed in medicine, in dyeing wool, to fix colors and as a part of baking powder.

CREAM SEPARATOR, a machine by which cream is separated from milk. The various models now in use all conform to the same principle, that of centrifugal force (which see). The separator consists of a revolving bowl, or drum, into which the milk flows. The bowl is made to whirl around at the rate of 5,000 to 8,000 revolutions a minute, and as it revolves the cream collects at the center, while the heavier parts of the milk are thrown against the outer rim. There are separate tubes through which the cream and skim milk flow out. These machines are operated by hand, electric, steam, water and horse power. See MILK.

CREASY, *kre'sy*, EDWARD SHEPHERD, Sir (1812-1878), an English historian, remembered chiefly as the author of *Fifteen Decisive Battles of the World* (see Article under that title). In 1840 he was appointed professor of history at the London University, and in 1860 was made chief justice of Ceylon, receiving at the same time the honor of knighthood.

ORECY, *krəsē'*, FRANCE, a town about 100 miles north of Paris, celebrated for the victory gained there by Edward III over a French army under Philip VI, August 26, 1346. About 300,000 of the French army were slain, including King John of Bohemia and many of the nobles. This battle was the first important conflict of the Hundred Years' War (which see). It was one of the first battles in which gunpowder was used, and it marked a definite step in the decline of feudalism, as it demonstrated the superiority

of the common foot-soldier over the knights in armor. At Crecy the English Black Prince won fame.

CREDIT, in economics, is the confidence existing between the creditor and his debtors, by which the payment of amounts due is postponed. This confidence may be based on either or both of two factors, trust in the honor and ability of the debtor, or security deposited by him to assure the payment of the debt. A common example of the former kind of credit is that of the so-called *trust, or book accounts*, of retail merchants.

Credit transactions involving the giving of security are usually evidenced by a so-called instrument of credit—that is, a note, bill, mortgage or bond. Transactions of this latter kind have become common in business, for when a debt is evidenced by a written instrument, the account can be transferred from one party to another, and money can be raised immediately, even before the debt is due. The development of the credit system in business is of comparatively recent date, and its growth has been favored by several movements, namely, the general raising of moral standards incident to advancing civilization, and the gradual increase in the rigidity of business law, through statutes and judicial interpretation, always toward the greater security of the creditor.

The credit system to-day underlies a vast majority of commercial transactions. Its advantage lies in the fact that by obviating the use of actual money in many instances, it frees for investment and other commercial purposes funds which otherwise would have to be held for use in minor affairs. It is in this way that modern banks have become such an important part of the industrial system. By collecting wealth which has been lying idle in the hands of a great number of persons who are either unwilling or unable to make loans, they make possible transactions of much greater importance. See **BANKS AND BANKING**.

Public Credit. This term signifies the confidence which men feel in the ability and disposition of a nation to pay its debts. Government bonds are promissory notes, and because of faith in the stability of a nation and the manifest intention to meet its obligations, the government can borrow unlimited amounts at very low rates of interest.

CREDIT, LETTER OF. See **LETTER OF CREDIT**.

CREDIT MOBILIER OF AMERICA. This was a title adopted by a joint stock company organized in Pennsylvania in 1863, with a capital of \$2,500,000. In 1867 the charter was purchased by a company organized for the construction of the Union Pacific Railroad, and in 1872 it became known that several members of Congress, as well as the Vice-President, were secret stockholders. This fact, together with the enormous rights and profits connected with the company, led to a congressional investigation, which developed a huge attempt at bribery and corruption. It was charged that several leading advocates of the plan had been bribed by donations of large blocks of shares in return for their influence. As a result, resolutions of censure were passed by Congress, and one member was sentenced to expulsion, but the sentence was never carried out. The scandal, after a time, died away, and the road proposed was finally built.

CREE, once one of the largest and strongest of the Algonquian tribes. They originally occupied a large territory in what is now Manitoba and Saskatchewan. After the whites began to settle the country the Cree Indians sold their lands to the Canadian government.

CREED, a statement of what one believes, employed most generally in regard to religious beliefs. The Apostles', the Nicene, the Chalcedonian and the Athanasian may be said to form the great creeds of the Christian Church.

The Apostles' Creed is so called from the belief that it originated with the Apostles themselves. The present text dates from the year 500, but evidently depends upon an earlier form, which may be traced back to about A. D. 150. The Nicene, the next oldest creed in the history of the Church, was adopted by the Council of Nice, A. D. 325, to settle the controversy concerning the dignity and character of Christ, and its essence is the expression of the belief that "Christ is of the same substance with the Father."

The Creed of Constantinople, which supplements the Nicene, emphasizes in particular the divinity of the Holy Ghost. The Athanasian Creed, dating from about the sixth century, is so called because it embodies particularly the doctrines of the Holy Trinity and the incarnation of the Son of God, which were so ably upheld by Saint Athanasius. These creeds were later supplemented

by the Councils of Trent and of the Vatican. Besides these great creeds, the various Protestant churches have their confessions of faith, which give a more detailed statement of their doctrines. Thus, the Lutheran Church has the *Symbolic Book of the Evangelical Church*; the Church of England, the *Thirty-nine Articles*, and the Presbyterians, the *Westminster Confession of Faith*, which is one of the most elaborate of all creeds and grew out of the Puritan agitation of the seventeenth century.

GREEKS, once the strongest Indian confederacy south of New York, excepting the Cherokee. The Greeks occupied a large portion of Georgia and Alabama and probably numbered 30,000. They built log houses in permanent villages. During the Revolution they sided with the English, and in the War of 1812 a part of them rose against the Americans and indulged in the terrible massacre at Fort Mims. In 1814, in a fierce battle at Horseshoe Bend, they were completely defeated. They stubbornly resisted every effort of the government to educate them and refused to give up their lands until they were forced to do so. They are now living in Oklahoma, and have accepted American citizenship. The lands of the Greeks are rich in oil, and many of these Indians have become very rich. They number about 7,000. See *FIVE CIVILIZED TRIBES*.

CREEPER, a name given to almost any



BROWN CREEPER

small bird that runs up and down the trunks of trees looking for insects. The common

brown creeper of the United States and Canada is a good example. It builds its nest in holes or in the crevices of trees, and it is remarkably active in its habits. It begins at the bottom of a tree and works rapidly up, searching all the crevices of the bark. When it decides to leave the tree, it flies to the bottom of another and again works its way up, using its sharp-pointed tail feathers to push itself along.

CREMATION, *kre'ma'shun*, the burning of the bodies of the dead. It was a frequent practice in ancient times and is now advocated on hygienic grounds by many scientific men on account of the dangers to the living caused by the presence of graveyards. From an economic standpoint cremation is advocated as a solution for the disposal of bodies in thickly-populated districts. There are some who object to it on sentimental and religious grounds, and there are others who state that since detection of criminal poisoning cannot be obtained when bodies are burned, cremation is an aid to crime. A favorable attitude toward the practice is, however, increasing.

CREOLE, *kre'ole*, the name which was originally given to all the descendants of Spaniards or Frenchmen born in the southern part of the United States and in the West Indies. The term is sometimes incorrectly applied to a mulatto, but it properly implies purity of European blood.

CREOSOTE, a substance discovered by Reichenbach in 1832 in wood tar, from which it is separated by a tedious process. It is generally obtained, however, from the products of the destructive distillation of wood. In a pure state it is oily, heavy, colorless, has a sweetish, burning taste and a strong smell of peat smoke or smoked meat. It is a powerful antiseptic. Wood treated with it is not subject to dry rot or other disease.

CREPE See *CRAP*.

CRESCENT, *kres'sent*, a representation of the moon in its horned state, used by the ancient Egyptians and the Greeks as the symbol of their moon goddesses. It was the emblem of the old city of Byzantium, and was adopted by the Turks when they captured Constantinople in 1453. After the establishment of the Turks in Europe, it was the universal emblem of their empire. A Turkish order of knighthood, instituted by Selim, sultan of Turkey, 1799, was known as the Order of the Crescent.

CRESCENT CITY, a name proudly borne by the city of New Orleans, because formerly the greater part of the town lay in a great crescent-shaped bend of the Mississippi River.

CRESS, the name of several species of plants, most of them of the mustard family. Water-cress makes a delicious salad, as its leaves have a moderately pungent, bitterish and slightly salty taste. It grows in cool springs and rivulets.

CRETACEOUS, *kre'ta'shus*, **SYSTEM**, or **CHALK SYSTEM**, a system of rocks between the Jurassic, below, and the Eocene, above, and the oldest system of the Mesozoic Era. It takes its name from the chalk beds which form a prominent feature of it in England and France, but the chalk formations constitute only a small portion of the system. In North America cretaceous rocks are numerous and extend over large areas, following the Atlantic coast from New Jersey to Florida, and the gulf coast from Florida to Texas, then extending up the Mississippi Valley to the mouth of the Ohio. They also form extensive areas in the great plains along the Rocky Mountains, extending northward as far as the mouth of the Mackenzie River and southward into Mexico. On the Pacific coast the rocks of the system appear at numerous points from California to British Columbia. The fossils show a great variety of animal and vegetable life. Among the animals were flying reptiles, birds with teeth, large sea serpents and land reptiles of great size. The plants show that trees similar to the oak, birch and poplar existed. See **GEOLGY**.

CRETE, *kreet*, an island in the eastern part of the Mediterranean Sea, belonging to Greece since 1913. It is 156 miles long and from seven to thirty miles in width, its total area of 3,199 square miles being not quite that of Delaware and Rhode Island combined. Manufacturing and trade are insignificant; the population subsists upon the local agricultural products, which are grain, wine, oil, wool, fish, etc. The people numbered 386,400 in 1932, about one-third as many as in ancient times. The capital city is Candia, with 33,400 people in 1932. The greatest Cretan of modern times was Eleutherios Venezelos (which see).

The early history of Crete is lost in the fables of Greek mythology, in which Saturn, Zeus and Minos are spoken of as among its

kings. At one time a republic, it was the seat of the Cilician pirates till conquered by the Romans, from whose hands it passed in 823 to the Saracens and then to the Greeks again in 962. In 1204 the Byzantine sovereign sold it to the Venetians, who held it until the second half of the seventeenth century, when the Turks conquered it after a desperate struggle, ending in a siege of the capital lasting for no less than twenty years. Insurrections against Turkish rule have more than once occurred; a formidable one, fomented by Greece in 1868, was with difficulty suppressed after a long conflict. There have been many revolts and uprisings in the last fifty years, due to the discontent under the rule of the sultan. In 1898 the autonomy of Crete was guaranteed by the Great Powers. The Greek revolution of 1935 (see **GREECE**) was fomented from Crete, the home of the Cretan hero Venezelos, who was its chief promoter.

CRETONNE, *kre'tahn'*, a cotton fabric whose chief characteristic feature is its showy pattern. It is widely used to make window hangings, bags, chair covers and numerous other articles familiar to the housewife. The cloth has an uneven surface, and the colors printed on it give a peculiarly attractive effect. Flowers and conventional designs are popular patterns for cretonne. The name *cretonne* was derived from the village of Creton, in Northern France, where the fabric is said to have had its origin.

CRIBBAGE, a favorite game at cards, played with the whole pack. It may be played by two, three or four persons; and when by two five or six cards may be dealt to each. Five-card cribbage played by two persons is the most scientific game. Sixty-one points make the game; there are no tricks and no trumps, the object being to make *pairs*, *fifteens*, *sequences* or *on the go*, or to prevent the adversary from doing the same.

Court cards and tens count as 10 each, and all the rest count for the number of spots upon them. Every *pair*, that is, every couple of cards of the same value belonging to different suits (two aces, two fours, two kings), counts 2; and when there are three or four similar cards, as many pairs are counted as there are different combinations of the cards, taken two at a time. Every combination of cards, the united spots of which make up fifteen, counts 2. A sequence

consists of three or more cards of any suit following one another in rank, and counts 1 for each card. When the player whose turn it is to play cannot play a card without going beyond thirty-one, the other player scores 1 for having been the nearest to thirty-one. This is called scoring 1 for the *go*. The last card played in any hand counts 1, also. When all the cards in a hand, either with or without the turn up card, are of one suit, or when all the cards in the crib, with the turn up card, are of one suit, it is called a *flush* and counts 1 for each card. When the turn up card is a knave the dealer scores 2 for his *heels*. When a knave of the same suit with the turn up card is found in the hand of either player, the player in whose hand it is scores 1 for his *nob*.

The counting is usually kept on a regular *board*, by means of two pins for each player. In the board are two sets of 30 holes, in groups of five, and as the game progresses the pins are moved forward. Twice around the board and into the *home* hole makes the game.

CRICHTON, *kri'ton*, JAMES (1560-1585), called *The Admirable Crichton*, a Scottish celebrity, son of Robert Crichton, lord advocate. Before he was twenty he had perfected himself in almost all the knowledge of his time, and he visited Paris, Genoa, Venice, Padua and Mantua, challenging all scholars to learned disputations, vanquishing docters of the universities and disarming the most famous swordsmen of the time in fencing. He was latterly tutor to a son of the Duke of Mantua, and is said to have been stabbed to the heart in a dastardly manner by his pupil.

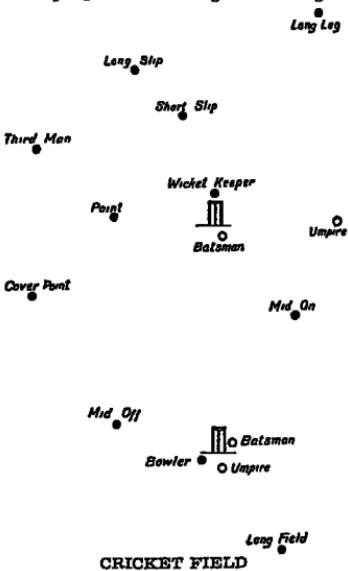
CRICK'ET, a little insect about an inch long, of a blackish or brownish color, common in houses and cultivated gardens. By rubbing together its peculiarly formed wing covers, the male can produce the pleasant chirping sound by which these insects are so well known and which has become associated with cheerful fireside scenes. There are a number of different species, which differ in color and form from the common cricket.

See *MOLE CRICKET*.

During the day crickets usually remain in the ground or in darkened spots. At night they go forth in search of their food, which consists of plant life. Eggs are laid in loose soil during the fall, and these hatch in the spring.



CRICKET, the great English national game, and almost equally popular in Britain's colonies. It is played with bats, balls and wickets on a piece of smooth greensward. It is played by two opposite sets or sides of players, numbering eleven each. Two *wickets* of three *stumps* each are placed fronting each other at a distance of about 22 yards apart, the stumps being upright rods stuck in the ground, and projecting 27 inches. On the top of each set of stumps are placed two small pieces of wood, called *bails*. After the rival sides have tossed for the choice of either taking the bat or fielding, two men are sent to the wickets, bat in hand. The opposite or fielding side are all simultaneously engaged; one (the bowler) being stationed behind one wicket for the purpose of bowling his ball against



CRICKET FIELD

the opposite wicket, where his coadjutor (the wicket keeper) stands ready to catch the ball should it pass near him; the other fielders are placed in such parts of the field as are judged most favorable for stopping the ball

after it has been struck by the batsman or missed by the wicket keeper. It is the object of the batsman to prevent the ball delivered by the bowler reaching his wicket, either by merely stopping it with his bat or by driving it away to a distant part of the field. Should the ball be driven any distance, the two batsmen run across and exchange wickets, and continue to do so as long as there is no risk in being "run out," that is, of having the stumps struck by the ball while they are out of their position near the wickets.

Each time the batsmen run between the wickets is counted as a "run" and is marked to the credit of the striker of the ball. If the batsman allows the ball to carry away a bail or a stump, if he knocks down any part of his own wicket, if any part of his person stops a ball that would have otherwise reached his wicket, or if he strikes a ball so that it is caught by one of the opposite party before it reaches the ground, he is "out," that is, he gives up his bat to one of his own side, and so the game goes on until all the men on one side have played and been put out. This constitutes what is called an "innings." The other side now take the bat and try to defend their wickets and make runs as their rivals did.

Usually two innings are played. The side scoring the greater number of runs wins.

CRIME, a wrong committed against a state, therefore an offense against all the people of the state. If a man is robbed, the security of the entire community is threatened, and all the people have common interest in punishing the guilty persons. There are different degrees in crime. The most heinous offense known to man is *treason*, which is an attempt to betray an entire nation to its enemies, or to give them even slight aid or comfort; *felony* is so serious an infraction of the law that punishment often extends to long periods of years and to the imposition of heavy fines. A *misdemeanor* is a minor offense.

See *Treason*; *Felony*; *Misdemeanor*, and the various crimes of magnitude such as *Murder*, *Robbery*, *Larceny*, *Arson*, *Conspiracy*, etc.

Criminology is that social science which conducts a scientific study of crime, in all its phases, with the hope of decreasing wrongdoing and reforming the wayward. The habits of criminals are studied; the machinery of justice is considered in its bearings upon reformation; methods employed in prisons and jails are investigated, to the end

that reform and not persecution and further hardening of moral sensibilities, may be accomplished. The subject has challenged the best thought of many people, and progress in checking evil tendencies is discernible.

CRIMEA, a peninsula of Southern Russia, between the Sea of Azov and the Black Sea, united to the mainland by the Isthmus of Perekop. It is about 200 miles long and 110 miles broad. Three-fourths of the Crimea belongs to the region of steppes, but the other part, confined entirely to the south and stretching along the coast from west to east, abounds in beautiful mountain scenery. Here the valleys are luxuriant with vines and olive and mulberry plantations, while the northern slope gives a large yield in cereals and fruits. The most important of the productions, besides those already mentioned, are flax, hemp and tobacco, of which a large quantity of excellent quality is produced. The forests are of limited extent. Fine-wooled sheep, horned cattle and horses are reared in large numbers. The chief town and port is Sebastopol; population, 1933, 78,300.

The country was anciently associated with the Cimmerians and in later times with various Greek settlements and minor kingdoms. After being for some time a dependency on Rome, it was overrun by barbarians, and in 1237 it fell into the hands of the Mongols, under Genghis Khan. About 1261 the Genoese were permitted to occupy and fortify Kaffa, and they rapidly extended their power in the formation of other settlements. They were expelled, however, in 1475 by Mahomet II, who made it a dependent khanate. In 1783 the Russians took possession of the country; and with the view of overawing the Turks the great naval arsenal of Sebastopol, occupying the most commanding position on the Black Sea, was begun by Catharine II in 1786. Its military resources were steadily developed up to the time of the Anglo-French campaign (see **CRIMEAN WAR**) of 1854, when it fell into the hands of the allies, by whom it was held until March, 1856. It was then restored to Russia.

After the World War, in 1921, the Crimean region declared its independence, and established a republican rule. It was later federated with the Soviet Union as one of the autonomous republics of Soviet Russia.

CRIMEAN WAR, the struggle caused by the attempt of the allied powers of England,

France and Turkey to prevent the aggressions of Russia in Turkey. The old plans for the extension of Russian power conceived by Catherine II were revived by Nicholas I, who, believing that he had secured himself from interference on the part of Austria and Prussia, and that an Anglo-French alliance was impossible, prepared to carry them out. Serbia, Bosnia, Bulgaria and the principalities of the Danube were to become protectorates, and Constantinople was to be provisionally occupied by Russian troops. However, the first markedly aggressive step, the demand by Russia for a protectorate over the Greek Church throughout the Turkish Empire, brought matters to a crisis. After a vain attempt to negotiate, the Russians occupied the Danubian principalities, and war was declared by Turkey in October, 1853, by France and England in 1854 and by Sardinia in 1855.

It soon became obvious that the Crimea must be the seat of the war, and the allied troops landed there in September, 1854. Five days after their arrival the Battle of Alma was won by the allies, and the march was then continued toward Sebastopol. The siege of Sebastopol was begun in October by a grand attack which proved a failure, and the Russians retaliated by attacking the English at Balaklava (October 25), but were defeated with heavy loss. It was at this battle that the famous, but useless, charge was made by the Light Brigade.

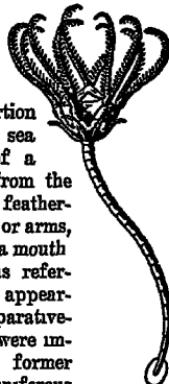
A second attack at Inkermann was again repulsed by the allies, but the siege works made slow progress during the winter, during which the ill-supplied troops suffered great privations. The death of Nicholas and the succession of Alexander II, in March, 1855, brought no change of policy. The bombardment was continued, and in September the French successfully stormed those parts of the fortifications known as the Malakoff and the Little Redan. The Russians then withdrew from the city to the north forts and the allies took possession. The chief subsequent event was the capture of Kars, in Asia, by the Russians, after a splendid defense by the Turks. By this time, however, the allies had possession of the Crimea, and overtures of peace were gladly accepted. A treaty was accordingly concluded at Paris in March, 1856, by which the independence of the Ottoman Empire was guaranteed.

CRINOIDEA, *krē' nōdē' ā*, or **SEA LILIES**, a group of sea animals, consisting of creatures which are attached during the whole or a portion of their lives to the sea bottom by means of a jointed, stony stem. From the tip of this stem radiate feather-like, flexible appendages or arms, in the center of which is a mouth. Their popular name has reference to their flowerlike appearance. Though now comparatively few in number, they were immensely numerous in former ages, and many carboniferous limestones are almost entirely made up of the stems, which break apart into circular sections. **ONE OF THE LIVING CRINOIDEA.**

CRINOLINE, *krin'ō lin*, originally, a stiff, wiry fabric, made of horsehair and used by women for petticoats, to make their dress skirts stand out from the figure. Later, the same name was applied to the hoop skirt, an article made of steel wire and tapes and used for the same purpose as the crinoline. Modern crinoline is a cotton gauze, dressed with glue. It is used for stiffening garments and as a material for hat frames.

CRIPPLE CREEK, Colo., founded in 1890 in the midst of a rich gold-mining section, is the county seat of Teller County, about thirty miles southwest of Colorado Springs, on the Colorado Midland railroad. During the time of its greatest prosperity two other railroads connected it with the larger cities. The industries largely center around the gold mines, which have yielded over \$700,000,000 of ore, thousands of men are employed in the district. The town was burned in 1896 and was at once rebuilt. Rise of the price of gold in 1935 gave renewed prosperity to the city. Population, 1920, 2,325, in 1930, 1,427, in 1936, 2,300.

CRITTENDEN COMPROMISE, a proposal introduced in the United States Senate in 1860 by Senator John Crittenden for the passage of an amendment to the Constitution, which would divide the Union into two sections, one composed of free states and one of slave states, the boundary line being the latitude of $36^{\circ} 30'$. The Federal government was not to have the power to abolish slavery.



ONE OF
THE
LIVING
CRINO-
IDEA

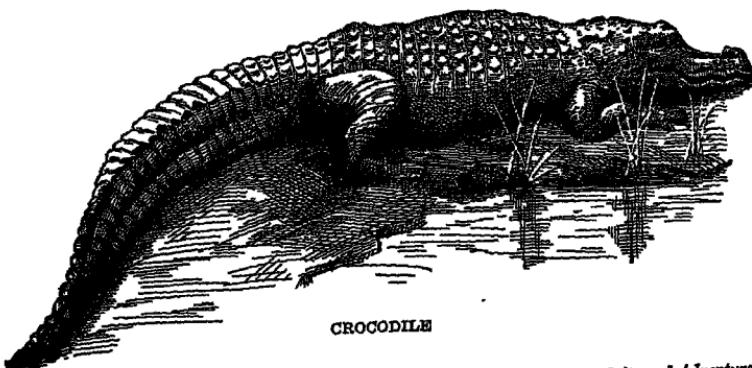
in the District of Columbia, nor to prohibit the interstate slave trade, nor to abolish slavery in a slave state. It was lost in the Senate on March 2, 1861, by a vote of 20 to 19, and in the House, January 14, 1861, by a vote of 113 to 80.

John Jordon Crittenden (1787-1863) the author of the Crittenden Compromise, was a native of Kentucky. He was graduated at William and Mary College served in the War of 1812, in the state legislature, in the United States Senate, several times as attorney general and finally as governor of Kentucky. Largely through his influence the state of Kentucky maintained its adherence to the Union.

CROATIA, *kro'as̄hə a*, and **SLAVONIA**, *sla'vō'n̄i a*, formerly a crownland of the kingdom of Hungary, one of the two main divisions of the former Austro-Hungarian monarchy. In 1918, on the dissolution of Austria-Hungary, the people of Croatia and Slavonia

tion was estimated at 2,603,683 in 1931.

CROCKETT, DAVID (1786-1836), a famous American frontiersman, soldier and politician, born in Tennessee. His early training was that of the typical wild frontier of the early nineteenth century. He received little or no education, but had native shrewdness and wit and by an outdoor life he became a remarkably skilful hunter. He took part in the war against the Creek Indians, serving under General Andrew Jackson, and was three times elected to Congress, where he attracted attention by his eccentricity of manner and dress. Soon after retiring from Congress, he took up arms with the Texans in their war for independence, and at the Alamo in 1836 he was one of the six survivors of the siege who were captured and massacred by the Mexicans. He published during his lifetime, several books of travel and adventure, among which were *A Narrative of the Life of David Crockett*, *A Tour to the North*



CROCODILE

joined with various other southern Slavic peoples and formed the new Jugo-Slavic nation (see JUGO-SLAVIA). Agram, the capital city of Croatia and Slavonia, was made the headquarters of the national council of the new state.

According to the old boundaries, Croatia is the larger and western portion of the crownland, and Slavonia, lying between Hungary proper and Bosnia, is the eastern. The crownland is separated by the Drave and the Danube from Hungary proper, on the northeast, and by the Save from Serbia and Bosnia, on the south. Dalmatia and the Adriatic Sea are on the southwest, and Styria, Carniola and Istria are on the west. The total area is 16,425 square miles; the popula-

and *Down East and Exploits and Adventures in Texas*. They were all characterized by atrocious grammar and crude and often coarse humor, but they displayed the same untrained common sense which he exhibited in his eventful career.

CROCODILE, *krock'o dīl̄*, the most highly-developed reptile, allied to the alligator. These two reptiles differ in that the crocodile has a narrower head than the alligator, and a sharper snout. Its tail is also more vertically flattened, and it is more agile and lighter in weight than the alligator. The true crocodile inhabits the warm regions of the eastern hemisphere, though some species are found in North and South America. The crocodile of the Nile is one of the best known

members of the family. In olden times this animal was worshiped by the Egyptians, who preserved the bodies of crocodiles with almost as great care as the bodies of human beings. The natives of Southern Asia and the Moluccas fear the species common there, because of its fondness for human flesh. The skin and flesh of the crocodiles form articles of commerce of considerable importance, the tough skin making a durable and valuable leather. See ALLIGATOR; GAVIAL.

Crocodile Bird, a bird of the plover family, found in the Nile Valley, so called because it has the habit of running over the bodies of crocodiles in search of food. The birds feed on insects and shellfish which cling to the sides of the crocodiles, and they even take parasites and bits of food from their lips and gums.

CROCUS, *kro'kus*, a genus of plants of the Iris family, one of the most common ornaments of spring gardens. Most of the species are natives of the south of Europe and Asia Minor, and three grow wild in Britain. The early spring flowers appear as soon as the snow has left the ground, even before their leaves. They are of a great variety of colors, and unless the winters are very cold, will grow from year to year.

CROESUS, *kree'sus*, the last king of Lydia, who lived in the sixth century B. C. His riches, obtained chiefly from mines and the gold dust of the River Pactolus, were greater than those of any king before him, so that his wealth became proverbial. After a reign of fourteen years his empire fell to the possession of Persia.

CROIX DE GUERRE, *kraw' de gare*, the French for "cross of war," is the name of a French military decoration instituted by law of April 8, 1915. The Croix de Guerre is made of Florentine bronze. It consists of four branches, among which are two crossed swords. On the reverse side the center represents a head of the republic bearing a Phrygian bonnet, ornamented by a laurel crown on which is engraved "French Republic." On the other side is the inscription



CROCUS

"1914-1915, 1914-1916," etc. The cross is worn on the left side of the breast immediately after the Legion of Honor or the Military Medal, and is fastened to a green ribbon having a red edge on each border and five red bands parallel to the edges.

This decoration was instituted to commemorate, from the beginning of the World War, special acts of bravery. It was conferred on military men of the armies on land or sea, whether French or foreigners, who obtained certain citations for bravery during the war against Germany. Civilians and members of the different military personnels also received the cross if they obtained one of the citations. Citations are distinguished in the following way:

Army a palm of bronze in the form of a laurel branch.
Army Corps a silver-gilt star.
Division a silver star.
Brigade regiment or assimilated unit, a bronze star.

Several citations obtained for various acts of bravery are distinguished by the number of stars corresponding to their degree, or by palms. The disposal of the palms being difficult on the ribbon when the number of palms exceeds five, for the fifth palm a silver palm replaces on the ribbon of the Croix de Guerre the five bronze palms. When the citation was given to a corps the Croix de Guerre was attached to the flag or standards of the corps.

CROMWELL, OLIVER (1599-1658), one of the great characters in English history, the leading figure in the revolution that de-throned Charles I. Cromwell was born at Huntingdon and educated at Sidney-Sussex College, Cambridge. He married Elizabeth, daughter of Sir James Bourchier, and for some years after his marriage he lived on his estate in Huntingdon. In 1628 he was member of Parliament, but he seems to have made no pronounced impression on that body at that time. In 1631 he went with his family to a farm which he had taken at Saint Ives: and some years later he removed to Ely



CROIX DE GUERRE

where he had inherited a property. He was again elected to Parliament in 1640 and took part in its deliberations on all important topics, without, however, becoming very prominent.

About this time the struggle between Parliament and the king was becoming acute, and the summer of 1642 found Cromwell, who was naturally a warrior, actively engaged in raising and drilling volunteers for the Parliamentary party. He served as captain and colonel in the earlier part of the civil war, distinguishing himself through his disciplinary powers and the well-drilled character of his troops. When the army was reorganized and, through the "self-denying" ordinance, all members of Parliament were excluded from commands, an exception was made



OLIVER CROMWELL

in favor of Cromwell, who kept his command of the cavalry. On the occasion of the surrender of Charles by the Scottish army in 1646, Cromwell was one of the commissioners, and in the distribution of rewards for services he received \$12,500 a year from the estates of the Marquis of Worcester. Affairs in Ireland demanding his presence, he was appointed lord-lieutenant and commander in chief; and by making a terrible example of Drogheda, he crushed the royalist party in that country within six months. Resigning the command of Ireton, he undertook, at the request of the Parliament, a similar expedition against Scotland, where Charles II had been proclaimed king. He saved himself from almost inevitable disaster by the splendid victory at Dunbar, and a year later he put an end to the struggle by his total defeat of the royalists at Worcester.

The Rump Parliament, as the remnant of the Long Parliament was called, had become worse than useless, and in April, 1653, Cromwell, with his soldiers, dispersed that body. He then summoned a council of state, consisting mainly of his principal officers, which finally chose a Parliament of persons selected from the three kingdoms, nicknamed *Barebones Parliament*, or the *Little Parliament*. Fifteen months later a new annual Parliament

was chosen; but Cromwell soon prevailed on this body, which was totally incapable of governing, to place the charge of the Commonwealth in his hands. The chief power now devolving again upon the council of officers, they declared Oliver Cromwell sole governor of the Commonwealth under the name of Lord Protector. Although practically absolute, Cromwell's government was wise and moderate, and restored England in the eyes of other nations to the position of dignity which had been lost. He made the nation respected and feared throughout Europe, and he maintained order at home until his death, in 1658. In 1899 Parliament erected a statue in his honor in Westminster, facing Whitehall.

Related Articles. Consult the following titles for additional information:

Charles I	Long Parliament
Charles II	Nasby, Battle of
Commonwealth of	Restoration
England (History)	Rump Parliament

CROMWELL, THOMAS, Earl of Essex (about 1490-1540), an English statesman who was one of the most pliant servants of Henry VIII. The king was much impressed by Cromwell's able defense of Cardinal Wolsey, in a case of impeachment tried in Parliament, and made him his private secretary. From this position Cromwell rose to be Chancellor of the Exchequer, Lord of the Privy Seal and Earl of Essex. Cromwell's subserviency, however, eventually caused his downfall. Having vigorously promoted the marriage of Henry and his third wife, Anne of Cleves, he fell under his master's displeasure when that tyrant tired of his wife, and accordingly Henry permitted the Earl to be tried for treason. At the height of his career, Cromwell was condemned and beheaded. Because of his vigorous efforts to suppress the monasteries, he was called "Hammer of the Monks." See **HENRY VIII.**

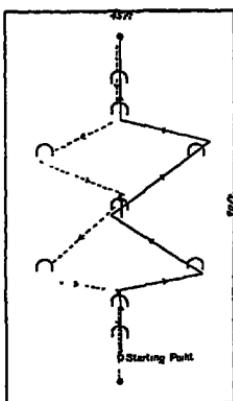
CROOKES, WILLIAM, Sir (1832-1919), one of England's most honored scientists, was born in London and educated at the Royal College of Chemistry. He began his career as superintendent of the meteorological department of Radcliffe Observatory and then became professor of chemistry at the Chester Training College. Professor Crookes occupied a foremost place among scientific men and was considered highest authority on the application of the principles and laws of chemistry to the industrial arts.

and on sanitary matters. Also he gave much attention to the relation of chemistry to various lines of industry, and among his discoveries is the sodium amalgam process for separating gold and silver from their ores and a special method for the study of substances through the spectroscope. His experiments in electricity led to the invention of Crookes tubes (see CROOKES TUBES), so generally used in electrical experiments. Among his most widely known works are *A Practical Handbook of Dyeing and Calico Printing*, *Select Methods of Chemical Analysis*, *Dyeing and Tissue Printing*, *A Solution of the Sewage Question*; *The Profitable Disposal of Sewage*, *The Wheat Problem and Diamonds*.

CROOKES TUBES, glass tubes or vessels from which the air has been exhausted and which contain electrodes at opposite ends. These tubes are used in electricity to secure various effects of electrical discharge, and are indispensable in the making of apparatus to produce X-rays. They take their name from the inventor, Sir William Crookes (which see).

Geissler tubes, invented by Geissler, are of a similar pattern. When used in connection with an induction coil and an electrical machine in the dark room, these tubes produce many beautiful luminous effects. A peculiar pattern of them is also used in the production of cathode rays (which see).

CROQUET, *kro'kət*, an open-air game, in which two or more persons with long or short-handled mallets endeavor to drive balls through a series of nine or ten wire arches (wickets) set in the ground in a certain arrangement. In the accompanying figure the wickets are set in the most common way. A croquet set consists of eight balls, painted to correspond with eight



CROQUET GROUND

mallets; two stakes, with bands to match the colored balls in the same order on each, and ten wickets. The object of the game is to start from one stake, drive the ball through the arches on one side, touch the lower stake and return through the arches of the other side to the starting stake (see the diagram). If two people play, each may use two balls; but when four play, each has but one ball. The players play alternately, and the side first completing the circuit wins the game. Special rules are formulated to cover emergencies, and a number of technical terms are in general use. A *rover*, for instance, is a ball that has made the circuit of the field but has not finally touched the starting stake; such a ball may play upon every other ball in the field in one turn. A *dead ball* is one that has been played upon since a point was made.

CROSBY, *kraw'sbi*, FANNY (1820-1915), a blind hymn writer, whose influence in this field has been second only to that of Charles Wesley. She was born at Southeast, N. Y. At the age of six weeks she became blind through the application of a hot poultice to her eyes, but this affliction seems only to have intensified her deep religious feelings in after life. At the age of fifteen she became a pupil at the New York Institution for the Blind, and during twelve years of residence there she displayed a marked aptitude for verse form. In 1847 Miss Crosby became a teacher in the Institution, and in 1858 she married a blind musician, Alexander Van Alstyne. Of more than 7,000 hymns from her pen, the best known include *Safe in the Arms of Jesus*, her favorite; *Pass Me Not, Jesus is Calling*, *I am Thine*, *Blessed Assurance*, *Rescue the Perishing*, and *Close to Thee There's Music in the Air* is the best known of her secular songs. She also published two volumes of poems and an autobiography, *Memories of Eighty Years*.

CROSS, one straight body laid at any angle across another. Among the ancients a piece of wood fastened across a tree or upright post formed a cross, on which were executed criminals of the worst class. It had, therefore, a place similar to that of the modern gallows as an instrument of punishment until, from the crucifixion of Christ, it came to be regarded by Christians with veneration. The Church adopted it as the peculiar symbol of the Christian religion.

and it is still, especially in the Roman-Catholic Church, paid peculiar honors.

The cross on which Christ died consisted of a long upright and a shorter crosspiece, the latter fastened on at right angles. This form is the so-called *Latin* cross. The *Greek* cross, represented by the cross of Saint George, has four arms of almost the same length, forming four right angles; in *Saint Andrew's* cross the arms cross obliquely. These two forms are blended together in the British Union Jack. Another form is the *Maltese* cross, with eight pointed ends.

CROSS, MARY ANN or MARIAN. See **ELIOT, GEORGE.**

CROSSBILL, a species of finch. The two mandibles are so strongly curved that the upper crosses the lower one when the bill is closed. These crossed bills are used with great power to tear pine cones to pieces for the seed which they contain. The crossbills can tear wood readily and soon destroy a wooden cage if confined in it. The male is reddish in color, and the female is of a yellowish-green. But few species are known in the United States, and these are confined almost wholly to the pine forests. One fanciful legend says that the bill of the bird was



AMERICAN CROSSBILL

crossed in trying to draw the nails from the hands of Christ when He was crucified.

CROSS FERTILIZATION, fertilization by which the pollen from the stamens of one

plant is conveyed to the pistils of another. This is accomplished by the agency of wind and water and by the aid of insects or birds. The effect of this process is that better seeds, that is, those which produce stronger and more fruitful plants, are produced. Botanists have found many special adaptations by means of which cross fertilization is effected. If, for instance, the anther and stigmas become mature at different times on the same plant, it is clear that the stigma can be fertilized only by the pollen of another plant; if the stigma and anthers are so placed that the pollen cannot fall on the stigma, it may fall on some insect which will carry it to another flower; again, in case the stigmas are borne on one plant and the pistils on another, the wind or some other agency must carry the pollen. More complex modes are also common. The stamens of the barberry are very sensitive and when touched by an insect, throw the pollen upon the pistil. Some plants, such as mints, are provided with levers, by means of which the pistil is thrust forward upon the insect previously dusted by the pollen. The pollen is sticky in some plants and adheres to the tongue of the insect. Some plants, like the orchids, are provided with traps, which catch the insects by the limbs and thus force them to scatter the pollen.

Birds, as well as insects, aid flowers in distributing their pollen. Birds that feed on the nectar become dusted with pollen, which in their passage they scatter upon other pistils. Hummingbirds are especially active in performing this service.

The term *cross fertilization* is also used in a general sense and applied in the cases of animals and the human race. A limited amount of cross fertilization, if the environment and other conditions are only slightly changed, is beneficial, but crosses between individuals which are too different in constitution and habits are usually detrimental. Mincing of species too closely related is also usually to the disadvantage of the offspring.

CROTON, a genus of plants, either herbs, shrubs or trees, which are widely distributed and bear rather small flowers in terminal clusters. Many species are aromatic, and rich perfumes are made from some, while others yield important medicines. The species which grow in the United States are not especially valuable, but the seeds of a species found in the Philippines yield a powerful oil, prescribed for constipation.

CROTON AQUEDUCT, *cro'ton ak'we dukt*, a system of aqueducts which helps supply New York City people with water. The source of supply is Croton Lake, created by the construction of a dam across the Croton River. The original aqueduct was completed in 1842. It is 381 miles long, has a total fall of 43.7 feet, and is constructed of stone, brick and cement. The water is taken across Harlem River in three cast-iron pipes, which are supported on a bridge 100 feet high and about 1,400 feet long. This aqueduct was designed to carry seventy-two million gallons a day, but it was soon found too small to supply the needs of the city. A second aqueduct was completed in 1890, extending from Croton Lake to 135th Street, New York. It is about thirty-one miles long, nearly thirty miles of which are a horse-shoe-shaped tunnel thirteen and a half feet square. The new aqueduct crosses the Harlem River by an inverted siphon, which is 300 feet below the river bed. Its capacity is over 300 million gallons a day. It is connected with the Jerome Park storage reservoir, about twenty-three miles from the dam. For six miles from this point the section is circular and twelve and one-half feet in diameter, having its capacity reduced to 250 million gallons.

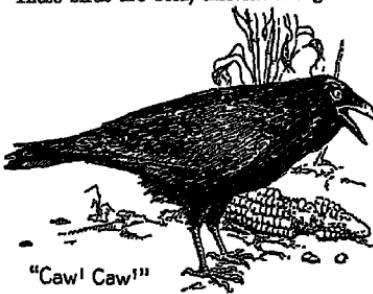
Since the Croton aqueduct was completed, the demand for still greater supplies of water for the city led to the building of the Catskill aqueduct. This furnishes 250,000,000 gallons a day, and was completed in 1913. The water is carried nearly a hundred miles, from the Catskill Mountains. Later additions have doubled the original supply, to meet the needs of a growing population.

GROUP, *croop*, a disease, usually attacking children only, which appears in the form of a hoarse cough, accompanied by difficult breathing and the appearance of suffocation. It usually occurs in the night and may be repeated, each attack lasting several hours and terminating in some fever. Sometimes, in the case of ill-nourished or feeble children, the disease is fatal. Inhaling warm vapors of water will often relieve the difficulty, but in severe cases a physician should be called. The child may be given warm milk to drink frequently, and doses of syrup of ipecac to bring on vomiting. The latter should be administered at the rate of a half-teaspoonful every fifteen minutes.

A second variety of the disease is known

as *membranous croup*, which is diphtheria of the larynx and is caused by the same bacillus that is active in diphtheria. In *false croup*, as the first species is known, nothing is coughed up, but in membranous croup pieces of membrane are expelled. Death may come from convulsions or from suffocation, though frequently the latter is prevented by the operation known as tracheotomy, in which a tube is inserted into the windpipe below the inflamed tract. Through this tube the patient breathes. Membranous croup demands the attention of a reliable physician. See *DIPHTHERIA*.

CROW, one of a family of birds containing about 200 species, found in nearly all parts of the world. The North American crow is about eighteen inches in length and has a compact, glossy plumage with some greenish reflections. The crows are social birds that sometimes gather in large flocks, are readily domesticated and sometimes are taught to imitate human speech. They make amusing pets and sometimes show an almost human intelligence, but they are mischievous and seem to take pleasure in annoying people. These birds are bold, thievish and generally



THE CROW

unpopular. A tame crow is as great a thief as is a wild one, and will carry off any bright trinket it can find. Opinions vary as to the right of the crow to protection. It surely destroys countless injurious insects, but it uproots newly-planted corn and seeks birds' eggs and young, helpless birds, also the eggs of poultry.

All are birds of strong flight, and all move along the ground by hopping, though most of them can run also. The *fish crow* is a rather small species, very common in the eastern United States. The magpies, jackdaws, rooks, jays and ravens are closely

related species, described under their proper titles.

CROW, a tribe of Indians, now living on a reservation in Montana. Originally a very warlike race, they sided with the whites against the Sioux and often proved of great assistance, especially as scouts. The Crow tribe lived originally in the valley of the Big Horn River. Their women were skilled in the making of ornamented garments. They now number about 1,800.

CROW BLACKBIRD, or **P U R P L E GRACKLE**, a large, handsome black bird, found in the eastern parts of America from Southern Canada to the Gulf of Mexico. It is about a foot long, with glossy jet-black color and fine greenish and metallic reflections. West of the Allegheny Mountains its representative is the very similar bronz grackle.

CROWN, a coin, of which the English crown is best known. The latter is equivalent to five English shillings, or about \$1.22 in United States money. It was originally made of gold, but since 1551 it has been issued in silver. It bears the imprint of a crown on one side and a likeness of the ruling sovereign on the other. The crown weighs 436.3636 troy grains, of which .925 is pure silver. The name is also used to designate the monetary unit of certain other countries, and these are named in the article *CORNS, FOREIGN*.

CROWN, a symbol of kingly authority, in form circular, to fit the head, made of gold and embellished with precious stones. It is worn on state occasions only. The modern crown is an evolution of the jeweled head-dress of Assyrian and Egyptian monarchs. A number of modern crowns are fabulously valuable, particularly some of those belonging to the reigning native princes of British provinces in India. They are set with scores of precious stones. The crown and jewels of the king of England are valued at about \$1,000,000.

CROWN POINT, a town in Essex County, N. Y., chiefly important for its historical associations. It was early the site of an English trading post, was settled by the French in 1731, but was destroyed in 1759 by a British attacking party. At the outbreak of the Revolution a body of Green Mountain Boys, under Seth Warner, surprised and captured the garrison, and it was held by the Americans until Burgoyne's invasion in 1777, when it was temporarily abandoned. The ruin of the fortifications erected at this point by the Brit-

ish after 1759, at a cost of more than \$10,000,000, may still be seen.

Crown Point is 110 miles northeast of Albany and ten miles from Ticonderoga, on the west shore of Lake Champlain and on the Delaware & Hudson railroad. It has small manufactures of lumber and allied products. Population, about 1,500.

CRUCIFERAE, *kru si'fər eɪ*. See MUR-TARD FAMILY.

CRUCIFIXION, *thr* (in art). The portrayal of the martyrdom of Christ has been a favorite subject of numerous artists. After the sixth century canvases on the theme became very popular, and it is an interesting fact that the earlier painters usually represented a living Christ with a crown of triumph, while those after the twelfth century depicted the Master as suffering and humiliated. Many other figures are grouped about the cross by the later artists, including the mother of Christ, Mary Magdalene and Saint John. The famous paintings of the Crucifixion include canvases by Fra Angelico, Perugino, Guido Reni, Tintoretto, Dürer, Rubens, Van Dyck and Murillo. See PAINTING.

CRUELTY TO ANIMALS, SOCIETY FOR THE PREVENTION OF. The first society for this purpose was organized in England in 1824, and it was soon influential in securing legislation which provided for the punishment of the beating or otherwise ill-treating of domestic animals, with fine or imprisonment. The first society in the United States was organized in New York in 1866, through the influence of Mr. Henry Bergh, who, during his lifetime, was the most active representative of the society and the idea for which it stood. Through the influence of this organization, legislation has been secured in nearly every state in the Union, fixing a penalty of fine or imprisonment, or both, for abusing domestic animals. Legislation on the subject also regulates transportation of live stock in those sections where stock is carried long distances before reaching market. Railways are now required to unload animals every twenty-four hours and give them rest, feed and water. This humane movement has extended practically to all civilized countries, and in some sections there are laws regulating the treatment of wild animals in captivity.

Henry Bergh (1820-1888) was born in New York City and was educated at Columbia College. Before he began the work for

which his name is universally honored he served in the American legation at the capital of Russia. Bergh also invented artificial pigeons for the sportsman's gun, and was the originator of the plan whereby ambulances are used to carry injured animals away from the streets.

CRUELTY TO CHILDREN, PREVENTION of, a movement for the protection of children from brutal treatment. The first formal organization in America for child protection was founded in New York in 1875 through the influence of Henry Bergh; others followed rapidly, and at the present time there are more than 350 such societies in the United States. These organizations work for legislation beneficial to children, they help enforce laws already enacted, and they bring before the proper authorities cases of neglect or ill treatment. Many of them include in their activities both the protection of children and of animals.

Some of these societies are financed and controlled by private individuals, and others have official relations with the state authorities. In Europe, Canada and other British colonies similar organizations are found in large numbers.



CRUSADES, *kru' sayd's* (from the Latin word meaning *cross*), the wars carried on by the Christian nations of Western Europe, from the eleventh to the thirteenth century, for the conquest of Palestine, and delivery of the Holy Land from the infidel Turks. They were given the name of Crusaders because the warriors wore the sign of the Cross. The antagonism between the Christian and Mohammedan nations had been intensified by the treatment the Turks accorded pilgrims to Jerusalem, and the first strenuous appeal to wrest the Holy Land was assured of response alike from the pious, the adventurous and the greedy.

The First Crusade. The immediate cause of the first Crusade was the preaching of Peter the Hermit, who had joined other pilgrims on a journey to Jerusalem. On his return he gave Pope Urban II a description of the unhappy situation of Christians in the East and

presented a petition for assistance from the patriarch of Jerusalem. The statements of the pope at the Council of Clermont in 1095 produced a profound sensation throughout Europe, and in 1096 several armies set out in different divisions. Most of these earliest crusaders, ignorant as they were of military discipline and not provided with sufficient food, perished before reaching Constantinople, which had been chosen for their place of meeting. A well-conducted regular army, however, of almost one hundred thousand knights, was headed by such men as Godfrey of Bouillon, Baldwin, brother of Godfrey, Robert of Flanders, Robert of Normandy, brother of William II, king of England, Raymond of Toulouse, and other heroes. They traversed Germany, Hungary and the Byzantine Empire, passed over into Asia Minor, conquered Nicaea in 1097, and shortly after fought the first pitched battle at Dorylaeum, winning a complete victory after a severe contest. They then marched upon Antioch, which fell into their hands in June, 1098. Surrounded in turn by a Turkish army, they were soon reduced to pitiable straits but succeeded in routing their besiegers, and after remaining nearly a year in the neighborhood of Antioch they began their march against Jerusalem. Their numbers were now reduced to little more than twenty thousand men, but after a fierce struggle the town was taken by storm (1099) and Godfrey of Bouillon was chosen ruler of the city (See Godfrey de Bouillon).

The Second Crusade (1147-1149) was occasioned by the loss of Edessa, which had been taken by the Christians in the First Crusade. Fearing still graver losses, the pope, seconded by Bernard of Clairvaux, exhorted the German emperor Conrad III, and the king of France, Louis VII, to defend the cross. Both these monarchs obeyed and led large forces to the East, but returned without accomplishing anything.

The Third Crusade was undertaken after the capture of Jerusalem by Saladin in 1187, the monarchs Frederick Barbarossa of Germany, Philip Augustus of France and Richard I of England, leading their armies in person. Richard and Philip Augustus agreed to unite their forces at Messina in Sicily, where they spent six months at the end of 1190 and beginning of 1191. Jealousies arose, however, between the monarchs, and within a few weeks after the fall of Acre the French King returned to Europe. Richard, now sole leader of the expedition, defeated Saladin, but having twice vainly set out with the design of besieging Jerusalem, he finally concluded a truce of three years and three months with Saladin, who agreed that pilgrims should be free to visit the Holy Sepulcher, and that the whole seacoast from Tyre to Jaffa should belong to the Crusaders.

The Fourth Crusade was set on foot by Pope Innocent III in 1202. Among its chief promoters were Geoffrey of Villehardouin, Baldwin of Flanders and the marquis of Montferrat, who was chosen leader. The

THE CRUSADES

CHURCH OF THE
HOLY SEPULCHER

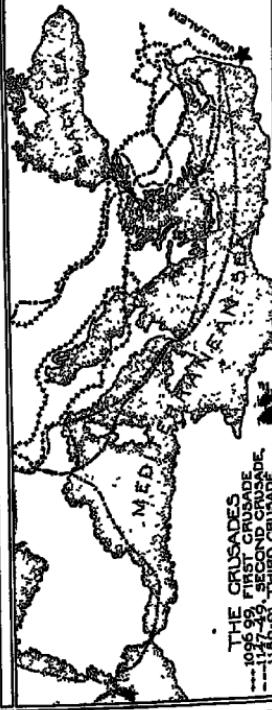
LANDING OF
ST LOUIS

SUMMARY	
Beginning of first Crusade.....	1096
Capture of Jerusalem.....	1099
Beginning of Second Crusade	1147
Beginning of Third Crusade	1189
Fourth Crusade begun by Knights of St. John.....	1201
Children's Crusade	1212
Beginning of Fifth Crusade	1217
Seventh Crusade preached by Pope Gregory.....	1228
Eighth Crusade undertaken by St. Louis	1248
Ninth Crusade	1267



THE SPIRIT OF THE CRUSADES

SHRINE AT ACRE



THE CRUSADES
1096-99, FIRST CRUSADE
1147-63, SECOND CRUSADE
1189-92, THIRD CRUSADE

PETER THE HERMIT



PETER THE LIONHEARTED
AS A CRUSAIDER

Crusaders assembled at Venice in the spring, but were diverted from their original purpose, first by the capture of the Dalmatian town of Zara, and then by the expedition which ended in the sack of Constantinople and the establishment of a Latin empire there (1204).

The Fifth Crusade (1238-1239), that of Frederick II, emperor of Germany, was undertaken in fulfilment of a vow. Frederick entered into negotiations with the sultan of Egypt, and without any fighting gained possession of the kingdom of Judea on the condition of tolerating in his kingdom the Mohammedan worship. He then concluded a useless truce of ten years and was crowned at Jerusalem.

The Sixth (1248-1254) and Seventh (1270) Crusades were led by Louis IX of France. In the first of these expeditions he took Damietta and marched up the Nile, but was compelled to retreat and finally to surrender with his whole army. He was released only on payment of a large ransom. The second expedition was still more disastrous in its results than the first. He landed his army on the northern coast of Africa, but he himself and a large number of his knights died before Tunis. A crusading army under Prince Edward of England (later Edward I), originally intended to cooperate with that of Louis, landed at Acre in 1271, but little was effected beyond a new truce for ten years.

The Children's Crusade. Authorities do not all agree as to the numbering of these Crusades, as there were in the intervals between the greater movements constant minor expeditions. Most remarkable of these lesser crusades was the Children's Crusade in 1212. It is believed that about fifty thousand boys and girls took part in this movement. A band of German children marched south to the Mediterranean and although thousands of them died of privation by the way, the remainder pressed on, confident that a way would be opened to them through the sea. When their hopes proved false, some of them remained in Genoa and some attempted to return to Germany, but few of them ever arrived at home. The French children gathered at Marseilles, and two merchants managed to entice them on board ship, with the promise of free transportation to the Holy Land. Two of the ships were wrecked and the children on the others were sold in Alexandria as slaves.

Despite the fact that the Crusades failed entirely in their real object, they were of inestimable importance in European history for many reasons. The European nations became better acquainted with one another; the power of the Church was materially increased; the citizen class gained much influence, partly because the nobility suffered by extravagant contributions to the Crusades, and partly because the enlarged commercial intercourse greatly augmented the

wealth of the cities. Another important political result of the Crusades was the growth of the royal power at the expense of that of the nobles. Intellectually the Crusades were of the utmost value, because they brought to the notice of Europeans the civilization of the Saracens, which was much higher in many respects than that of any of the western nations.

CRUSTACEA, *krus'ta'shah*, the highest group of jointed animals. There are about 10,000 living species, the majority of them being sea animals, though a few are found upon the earth or in stagnant or running fresh waters. The smaller ones are an important source of food to other marine animals, while some of the larger types are among the favorite sea foods of all nations. Crustaceans have five pairs of appendages on the head, and all of their limbs excepting the first pair are forked. The entire body is covered with a hard coating, which in some forms is almost bone-like, but in others is merely tough and leathery. The animals lay eggs, which are almost always hatched in water, though some of the land species carry the eggs and young on the under side of the abdomen. As the animal grows its skin becomes constricting at intervals, and so it is cast off, together with the shell which it has secreted.

Related Articles. Consult the following titles for additional information.

Arthropoda
Barnacle
Crab

Lobster
Shrimp
Zoölogy

ORY'OLITE, or **KRY'OLITE**, a mineral, a native fluoride of aluminum and sodium, found at Evgitok, in Greenland, whence it is exported. It is of a pale grayish-white or yellowish-brown color, with a glassy lustre, and occurs in masses of thin layers folded upon one another. It has been employed as a source of aluminum, and in the manufacture of a hard, porcelain-like glass of great beauty.

CRIPT, *kript*, a vault under a church, designed originally to receive the bodies of the saints and martyrs. It developed out of the *confession* and became enlarged so as to contain the altar and a room to worship reliques. It generally occupied the space below the transept, choir and apse. From the ninth to the thirteenth century the crypt formed an important feature of church architecture, particularly in the Romanesque style. One of the famous examples is that under the

Glasgow Cathedral, and others are found in the cathedrals of Canterbury, Gloucester and Saint Mark's and in the Church of Saint Peter's. See ALTAR.

CRYPTOGAMOUS, *krip tōh' gā mus*, PLANTS, or **CRYPTOGAMS**, *krip tōh' gāmz*, a term that includes all plants which do not bear seeds. In contrast with these, the seed-bearing plants are often called phanerogams. See BOTANY.

CRYSTALLINE, *kris'tal line*, or *kris'tal lin*, LENS. See EYE.

CRYSTALLINE ROCKS, rocks formed by crystallization, such as granite, believed to have acquired this character by the action of heat and pressure. See IGNEOUS ROCKS.

CRYSTALLIZATION, *kris tal i sō' shun*, a method of formation peculiar to many solid substances, whereby they are formed into masses of crystals. The forms thus produced are numbered by the thousands, but these can all be classified under six systems, as follows:

1. **The Regular Cubic System.** Crystals of this system have three lines or axes of equal length, crossing each other at the middle point at right angles. The ends of the axes lie in the center of the respective planes of the crystal. The regular crystals of this system are cubical. Common salt, iron pyrites, galena or lead sulphide, silver, copper and gold are examples of substances crystallizing on this plan.

2. **The Square Prismatic System.** In this system the axes are at right angles to each other, but one may be longer than the other two. The short axes may terminate in the middle of the planes of the crystal or at the edges of these planes, and the long axis may terminate in a point where all the faces meet. This arrangement forms a pyramid, or the crystal may have the form of two pyramids, with their bases together. Binoxide of tin, calomel and yellow prussiate of potash are common examples of this form of crystals.

3. **The Right Prismatic System.** In this the three axes are all of unequal length, but are placed at right angles to each other. The crystals belonging to this system are of the form of right rhombic prisms and rhombic-based octahedrons. Sulphate of Potash, sulphur, nitrate of potash and topaz crystallize on this plan.

4. **The Oblique Prismatic System**, in which two of the axes are placed at right angles to each other, while the third is inclined. The axes may all be of different lengths. The crystals take the form of oblique prisms. Borax, copperas (sulphate of iron), sulphate of soda and carbonate of soda (sal soda) are common examples.

5. **The Double Oblique Prismatic System.** A crystal in this plan has three axes of unequal length, intersecting obliquely with

each other. The crystals of this system are often irregular and difficult to classify. Blue vitrol (sulphate of copper), sulphate of manganese and some forms of tartaric acid crystallize according to this plan.

6. **The Hexagonal Rhombohedral System.** This system has four axes, three of which are in the same plane and inclined to each other at an angle of sixty degrees, while the fourth is perpendicular to them. This system gives a regular six-sided prism. Many varieties of limestone crystallize according to this plan, and some of the crystals are so minute that they cannot be seen without a microscope. Quartz, ice, snowflakes and calcite also crystallize in this system.



CUBA, *ku'bā*, the "Pearl of the Antilles," a long, narrow island, the largest and most important of the West Indies group. With the Isle of Pines, which lies to the south, and several smaller and unimportant islets, it forms the republic of Cuba.

The center of Cuba from east to west is considerably east of the southern coast of Florida. From Florida Keys across the straits of Florida the distance to the island is 110 miles. Havana is in almost the same longitude as Detroit, Michigan, and is 200 miles west of the longitude of Panama. The area of the island is 44,164 square miles; the republic is therefore nearly as large as Pennsylvania. Its total length is 730 miles, and its greatest width is fifty miles. The coast line measures 2,500 miles.

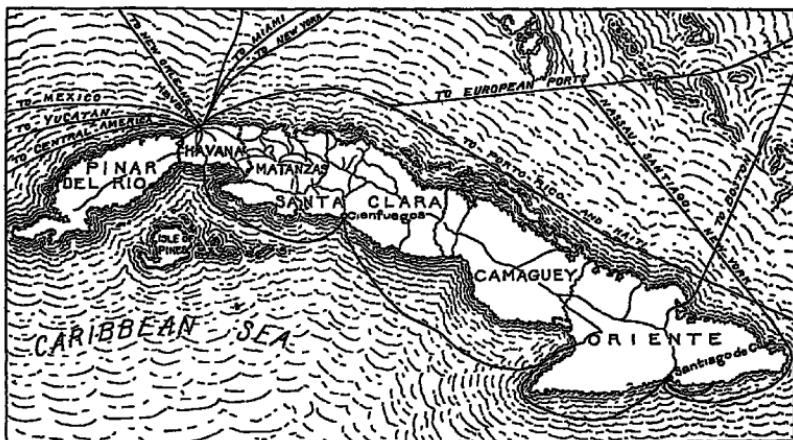
The People. The population of the island in 1933 was 4,011,088. Nearly two-thirds of the inhabitants are native Cubans, about 190,000 were born in Spain, and the remainder are largely Americans, negroes, and Chinamen. The negroes are most thickly settled in Oriente, where 43 per cent of the people are black; they are least numerous in Camaguey, where they are but 18 per cent of the population. Because Spain owned the island from its discovery until 1898 the official language is Spanish, but English is gaining remarkable headway. When independence was secured 59 per cent of the Cubans over ten years of age were illiterate. Twenty years later the native illiteracy had been reduced to 41 per cent, during

the time when new educational facilities were not yet fully established. The religion is very largely Roman Catholic. The University of Havana is at the head of the system of education. One good secondary school is maintained by the government in each of the six provinces; there are nearly 4,000 free public schools and 400 private schools.

Surface and Drainage. The Copper Mountains traverse the island from east to west and form a low watershed, varying from 110 to 400 feet in altitude. The highest peak is Pico Torquinos, which has an altitude of 8,320 feet. From each side of the watershed the surface slopes gradually to the coast, forming undulating, well-watered plains,

August are the hottest months. The average annual rainfall at Havana is sixty inches, and, with few exceptions, the entire island has an abundance of rain for all agricultural purposes; in some sections it reaches 100 inches. Only a few small areas in the interior require irrigation. In the highlands the climate is generally healthful, but in the lowlands much sickness prevails, although recent experience seems to indicate that this is due more to the unsanitary condition of the country than to the climate.

Mineral Resources. Deposits of coal, copper, gold, silver, and iron are found particularly in the district surrounding Santiago de Cuba. Copper has been mined in



THE ISLAND OF CUBA

covered with luxuriant forests and plantations. Numerous lagoons and salt marshes occur in the lowlands along the coast. The irregularity of the coast line provides a number of good harbors, but in many places the coast is low and rocky and the water is shallow.

The island has about 200 streams large enough to be called rivers, but they are all short, and only a few are navigable. The Rio Cauto, which is the largest, admits of the passage of boats for sixty miles. There are only a few small lakes, but the large salt water lagoons on the north side resemble lakes.

Climate. Cuba has a tropical climate. The mean annual temperature is 78°, and the maximum seldom exceeds 88°. July and

the mountains with profit; iron ore is shipped from Santiago to the United States, the annual shipment amounting to about 30,000 tons. Asphalt is obtained in the Bay of Cardenas, and considerable salt is produced in other localities. The other mineral deposits are not of sufficient extent to warrant working.

Agriculture. The island is covered with a luxuriant growth of vegetation. Flowers, grasses and many varieties of herbaceous plants are found on the lowlands, while the mountains to their summits are clothed with heavy forests, containing mahogany, ebony, rosewood, granadilla, cedar, live-oak and other valuable timber.

The soil and climate are favorable to agriculture, which is the leading industry. Pre-

vious to the last war for independence, the country contained over 90,000 plantations, farms, cattle ranches and orchards. During the war many of these were devastated, but after the establishment of a free government agriculture became permanently more stable. Sugar, tobacco, coffee and tropical fruits are the leading products. Of these sugar is the most important; it was once predicted that when all of the land suitable



A SCENE IN RURAL CUBA

for growing sugar cane should be brought under cultivation, an annual crop of a half million tons of sugar could be produced. In reality, the sugar needs of the world have stirred Cuban planters to extraordinary endeavors. The average annual production for several years following 1926 was almost 3,000,000 tons; the high point was more than 4,000,000 tons. The depression years reduced the output to 2,400,000 tons, by decree.

Tobacco is second only to sugar in importance, and a large revenue is derived from its growth and manufacture. Cuban tobacco maintains a standard value in all markets, on account of its excellent flavor, and the province of Pinar del Rio is the most important tobacco producing region in the world. Cattle raising is an important industry, and large areas are given to the growing of vegetables, corn and poultry. Bee keeping is also successful.

The manufactures are practically confined to cigars and other products of tobacco and to the manufacture of raw sugar.

Transportation and Commerce. Roads are generally poor, and lack of good means of transportation in the interior is a great hindrance to commerce. Havana is connected with Pinar del Rio, Matanzas, Cabanas, La Isabella, Camaguey, Santiago de Cuba, Manzanillo and Cienfuegos by railway. A line of railway extends across the island from

Moron to Jucaro, and another connects Camaguey with the port of Neuvetas. In all, there are about 2,360 miles of railway, some of which is in poor condition.

The irregularity of the coast provides numerous good harbors, about forty being accessible to ocean-going vessels. Havana, Matanzas, Cabanas, Cienfuegos and Santiago de Cuba are the important seaports. Regular communication is maintained with the Atlantic and Gulf ports of the United States and with the commercial centers of Europe. In 1918 a new line was established between Cuban and Spanish ports. Cuba is situated at the convergence of many transatlantic routes, and the ships of all nations find their way into the harbor of Havana, the principal seaport. The commerce of the island is rapidly growing. The foreign trade is largely with the United States, and sugar is the leading commodity.

Government. Cuba is governed in accordance with the Constitution adopted in 1921, but largely revised late in 1928. The government is republican in form and differs but slightly from that of the United States. The head of the administration is the President, who must be a native Cuban or a naturalized citizen who served ten years in the Cuban army during the wars for independence. He is elected by popular vote for a term of six years and cannot serve more than one consecutive term. He appoints and removes members of his Cabinet, who are responsible to him for the administration of their departments. The legislative power is vested in a Congress, consisting of two houses, a Senate and a House of Representatives. The former contains six Senators from each of the six provinces. Since 1933 all returning Presidents become Senators for life. The House of Representatives consists of one member for every twenty-five thousand inhabitants or fraction thereof more than 12,500. They are elected for six years, one-half retiring every three years. Congress holds annual sessions. Cuba has a currency system, and its money is made under contract by the United States Mint, but American money is highly favored, and it circulates freely.

The island is divided into six provinces: Havana, Matanzas, Pinar del Rio, Camaguey, Santa Clara and Oriente. Each province has a governor and an assembly, both elected by the people for a period of three



Underwood & Underwood

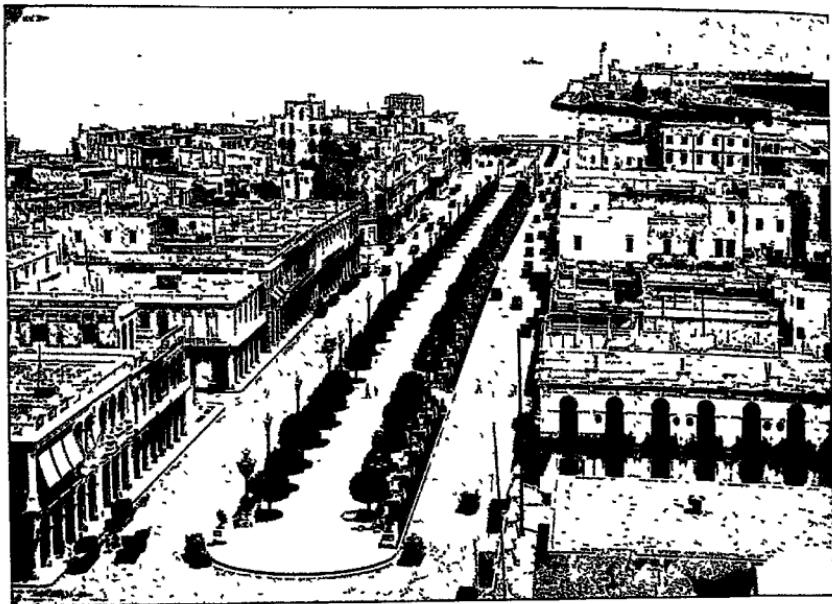


Erwing Galloway

SCENES IN CUBA

Above: The Capitol of Cuba, in Havana, dedicated Feb 24, 1931.

Below: A section of Cuba's Central Highway, one of the world's finest automobile roads



THE PRADO, PICTURESQUE STREET IN HAVANA
View is toward the entrance to the harbor and the historic Morro Castle.

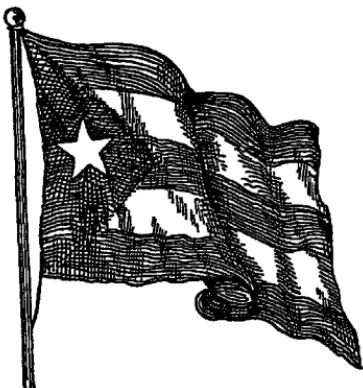


A BUSY SCENE AT A SUGAR CENTRAL (MILL) IN CUBA
The cane is brought from the plantations in large two-wheeled carts, drawn by oxen.

Ewing Galloway

years. There is a supreme court for the interpretation of the Constitution, and a Court of Appeals is established in each of the six provinces. Every male Cuban over twenty-one years of age and not mentally incapacitated or convicted of crime, all Spanish residents who have been on the island since April 11, 1899, and all foreigners who have resided there since January, 1, 1899, are entitled to franchise. Foreigners who have taken up their residence there since January, 1, 1899, are required to show five years' residence for naturalization.

History. Cuba was discovered by Columbus in 1492. It was settled in 1511 by Diego Columbus, son of Christopher, who founded Santiago in 1514, and in 1519 the present city of Havana was established. This settle-



CUBAN FLAG

The triangular field is red, the stripes are alternately blue and white

ment soon became the foremost town in the island and the center of government. In spite of the typically cruel government exercised from the first, the colony remained until 1898 the "Ever-Faithful Isle."

The Spaniards reduced the natives to slavery and treated them so cruelly that by the middle of the sixteenth century the race was almost extinct. This required the introduction of negroes from Africa, and they were employed so constantly and under such terrible conditions that mortality among them was greater than increase, and the government was compelled to import constantly increasing numbers. Havana was destroyed by the French in 1534 and again in 1554 and was captured by the Dutch in 1624, but it was immediately restored and thereafter was

repeatedly the prey of filibusters and pirates.

During the eighteenth century, Cuba was exploited by a line of vicious and oppressive governor-generals but after the Seven Years' War, during which England had captured the island only to return it to Spain in 1763, prosperity ruled and the resources of Cuba were developed. Still, unscrupulous governor-generals were enabled to repress its natural progress by exacting enormous taxes and vast sums in tribute. The island was attractive to American statesmen, especially those of the South, as a field for the extension of slavery, and it was the secret ambition of many Presidents to gain control of it by purchase. Finally, in 1848, President Polk offered \$100,000,000 to Spain, but it was refused. In 1854, eminent American ministers to Great Britain, France and Spain, among whom was James Buchanan, united in drawing up the Ostend Manifesto (which see), which urged the United States to annex Cuba by force if Spain refused to sell. Nothing came of these efforts.

Meantime, the people of Cuba were striving to abolish slavery and to gain their independence. Many insurrections occurred, notably those of 1849 and 1854, which, though causing great suffering, accomplished little. Finally, in 1868, began a ten years' struggle which extorted from the Spanish government the promise of liberal government, representation in the Spanish parliament and the encouragement of industry. These promises were but partly kept, however, and discontent increased until 1895, when the last great rebellion broke out. Spain sent General Campos to the island to suppress the rebellion, but the insurgents under Gomez, Maceo and Garcia continued to gain successes and by guerrilla warfare completely checked the efforts of the Spanish soldiery to pacify the island. Campos was succeeded by Weyler, who undertook such savage measures that sympathy was aroused for the Cubans throughout the world and especially in the United States. Weyler was superseded by Blanco in 1897, and in spite of the promise of autonomy the insurrection continued and seemed to gain strength in the following winter.

Cuba meantime had frequently requested the United States to interfere in its behalf, and the time seemed opportune for such interference when an American warship, the *Maine*, was destroyed in Havana harbor, Feb-

ruary 15, 1898, by some mysterious cause which the American people believed to be known to Spain. In April of that year Congress declared that "the people of Cuba are and of right ought to be free and independent." War was declared against Spain, and in a brief conflict American arms were triumphant everywhere. By the Treaty of Paris, December 10, 1898, Spain relinquished all sovereignty over Cuba.

The United States temporarily occupied the island. A constitutional convention was called in 1901, and a Constitution was adopted, including a special amendment, known as the Platt Amendment, proposed by the Congress of the United States, to guarantee that the government should never enter into any treaty with a foreign power which would impair the independence of the island; that it should not assume any debt for whose payment it could not provide; that the United States could interfere to preserve the independence of the island or to protect life, property or individual liberty; that the United States be given certain coaling and naval stations. In December, 1901 the first President was elected, in the person of Tomas Estrada Palma, and on May 20, 1902, the United States formally withdrew.

In 1906 an insurrection broke out, headed by a defeated candidate for president. The Cuban army was powerless and social order in some provinces was almost destroyed. The United States therefore intervened and sent a commission, headed by Hon. W. H. Taft, Secretary of War, to the island. This commission tried to reconcile the opposing factions, but without success. President Palma resigned and the Cuban Congress failed to elect a successor. Thereupon Secretary Taft issued a proclamation placing the republic under military government, and under the control of the United States order was immediately restored. The United States government in again assuming control of the island made it very plain that the control would continue only until the people of Cuba were again in condition to proceed peaceably with a new election, and the government could be transferred to the officers thus chosen. A national election was held November 14, 1908, and Gen. José Miguel Gomez was chosen President. On January 13, 1909, President Gomez was inaugurated. On January 13 the United States troops began to withdraw, and in April the last detachment

departed, leaving the Cuban republic again under control of its own government.

Trouble occurred again over the elections of November, 1916, when M. G. Menocal, the Conservative candidate, was chosen President. The opposition party, under the leadership of ex-President Gomez, revolted, and in February, 1917, seized Santiago de Cuba the capital city of Oriente. With the aid of an American company of Marines order was restored and Menocal was installed as President. The 1920 elections resulted in the election of Alfredo Zayas. His administration was stormy, and when, in 1924, he was again opposed by Menocal, he supported Gen. Gerardo Machado, who was elected. In 1928, Machado was re-elected for a six-year term. Machado was a man of strong character but his administration was marked by many excesses, and by great industrial and agricultural depression. Harsh measures were adopted to suppress the growing opposition to his rule, but in 1933 the Cuban army, until then loyal, joined the revolting element, and Machado fled from Havana, finding asylum first in the United States, then in Santo Domingo. Mendieta became President in 1934; Miguel Gomez, in 1936.

Related Articles. Consult the following titles for additional information.

Camagüey	Isle of Pines
Cienfuegos	Matanzas
Garcia y Iniguez	Palma Tomas, E.
Gomez y Baez, M.	Santiago de Cuba
Havana	Spanish-American War

CUBE, a geometric solid having six equal square faces. A cube is used as a unit of measure for volume. One *cubic inch* is a volume equivalent to a cube one inch in each of its dimensions. The volume of a cube is equal to its height a , times its width a , times its length a , or a^3 . From this circumstance the third power of a number, which is the product of a number taken three times as a factor, is called its cube. One of the famous mathematical problems of antiquity was that of the "duplication of the cube," that is, to find a cube whose volume is twice that of a given cube. It is impossible of solution by the processes of elementary mathematics. See **CUBIC MEASURE**.

CUBEBBS, the fruit of species of plants belonging to the pepper family. The cubebbs of pharmacy are produced by a climbing woody shrub, a native of the East Indies. It has round, ash-colored, smooth branches, each of which bears from forty to fifty small,

globose fruits, about one-fifth of an inch in diameter. The odor of cubeb is agreeable and aromatic; the taste, pungent, acrid and slightly bitterish. It is used by the natives for flavoring, but in other countries chiefly in medicine, as an astringent and in cases of indigestion and catarrh.

CUBE ROOT, the process of resolving a number into three equal factors, or of finding the length of one edge of a cube.

The radical sign ($\sqrt[3]{}$) with the small figure 3 over it denotes that the cube root of the number over which it stands is to be extracted. Thus, $\sqrt[3]{1728} = 12$

The cube of a number is the product of the number used three times as a factor.

The cube root is one of the three equal factors.

The cube of a number having two places of figures consists of the cube of the tens, plus three times the product of the square of the tens by the units, plus the product of three times the tens by the square of the

$$\begin{array}{r}
 48 = 40 + 8 \\
 (40 + 8)^3 = 40^3 + 3(40^2 \times 8) + 3(40 \times 8^2) + 8^3 \\
 40 + 8 \\
 40 + (40 \times 8) \\
 (40 \times 8) + 8^2 \\
 40 + 2(40 \times 8) + 8^2 \\
 40 + 8 \\
 40 + 3(40 \times 8) + (40 \times 8) \\
 (40 \times 8) + 2(40 \times 8) + 8^2 \\
 40 + 3(40 \times 8) + 4(40 \times 8) + 8^2
 \end{array}
 \quad \begin{array}{r}
 40^3 = 64,000 \\
 3(40^2 \times 8) = 28,400 \\
 3(40 \times 8^2) = 7,680 \\
 8^3 = 512 \\
 64,000 + 28,400 + 7,680 + 512 = 110,592
 \end{array}$$

In extracting the cube root of a number we take the number apart, as it were, so as to show the three equal factors. The process is therefore the reverse of finding the cube of the number. Students of arithmetic usually find the geometric or block method the most satisfactory in explaining the process. In the diagrams, Figure 1 represents 40^3 and has a content of 64,000 cubic units; Figure 2 represents $3(40 \times 8)$ and the contents of these three blocks are 28,400 cubic units; Figure 3 represents $3(40 \times 8^2)$ and the contents of these blocks are 7,680 cubic units; Figure 4 represents 8^3 or 512 cubic units.

In extracting the cube root of 110,592, we

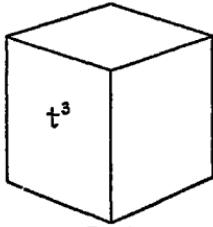


Fig. 1

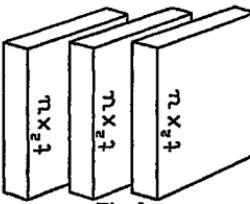


Fig. 2

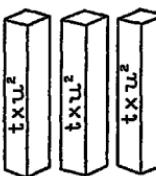


Fig. 3



Fig. 4

units, plus the cube of the units. The formula may be expressed algebraically by the cube of the quantity $t + u$, in which t represents the tens and u the units. $(t + u)^3 = t^3 + 3(t^2 \times u) + 3(t \times u^2) + u^3$.

The following multiplication, expressed by an algebraic formula, shows how this result is obtained:

$$\begin{array}{r}
 t+u \\
 \hline
 t^3 + 3tu + u^3 \\
 t^2 \times u + t \times u^2 \\
 \hline
 t^3 + 2tu + t^2u \\
 t^2u + 2tu^2 + u^3 \\
 \hline
 t^3 + 3tu + 3tu^2 + u^3
 \end{array}$$

A similar result in figures may be obtained by taking any number of two places, as 48, and cubing it, as you would a literal quantity in algebra. This may at first glance appear difficult to young pupils, but a careful study of the following will clear it up:

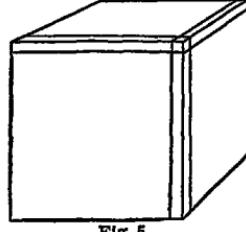


Fig. 5

use 40 as the first divisor, since by inspection we see that it is the largest number whose cube is contained in 110,000, the first period

PROCESS

$$\begin{array}{r}
 110'592 \quad | 40+8 \\
 64\ 000 \\
 \hline
 3 \times 40^2 = 4800 \quad | \quad 46\ 592 \\
 3 \times 40 \times 8 = 960 \quad | \quad 592 \\
 \hline
 8^3 = 64 \quad | \quad 592 \\
 \hline
 5324 \quad | \quad 592
 \end{array}$$

After subtracting 64,000, the cube of 40, we have a remainder of 46,592, which represents

the quantity in the unused portion of the formula— $3(40 \times 8) + 3(4 \times 8^2) + 8^3$.

Since we know the tens figure in the root to be 4, we use three times the square of the tens as a trial divisor to find the units. When this figure is found we add to the trial divisor the remainder of the formula, $3(40 \times 8) + 8^2$, and multiply the sum of these additions and the trial divisor by 8, the result being 46,592.

Figure 1 represents a cube the length of whose respective edges is 40 units; figure 5 represents the cube after the additions shown in figures 1, 2 and 3 have been made, and its respective edges have a length of 48 units.

CUBIC MEASURE teaches the process by which to ascertain the volume of bodies which are solids, having the three dimensions of length, breadth and thickness. The volume of a solid whose sides are regular is found by multiplying together the numbers representing its three sides. The arithmetical table relating to solids is given below:

1 cubic foot=1728 cubic inches
1 cubic yard=27 cubic feet
1 gallon=231 cubic inches
1 bushel=2150 4 cubic inches

Each of the figures above, as 1728 cubic inches, was found by multiplying a related number by itself three times. A cubic foot is a regular solid 12 inches in length, 12 inches in breadth and 12 inches in thickness; its volume equals $12 \times 12 \times 12$ inches, or 1728 cubic inches. To find the side of a cube which will contain one gallon, or one bushel, extract the cube root of the number which represents its volume (see CUBE Root).

Under the heading *Mensuration* will be found many exercises in measurements. See, also, *Arithmetic*.

CUBIST SCHOOL OF PAINTING, a school of art in which the idea conveyed by the artist is expressed through cubes, triangles and other geometrical figures. The principle upon which the Cubists work may be expressed thus:

"He takes the elements of expression from the forms and colors of nature and uses them not to represent objects but to produce an organism which will contain in terms of art what a given subject means to him in terms of sensation."

The result is a picture which suggests but does not reproduce and which may be called an exaggerated impressionistic creation. The Cubists, who came into prominence in 1913, went to all manner of extremes in working out this peculiar theory, producing some

manifest absurdities, but also some pictures of real value. It was generally agreed that they were too radical to establish a permanent school of art, but that they rendered art a valuable service in arousing a new interest in the subject of painting. The founder and leader of the movement is Paul Picasso, who painted the much-discussed, *The Woman with the Mustard Pot*. Other pictures that were subject to considerable comment included Marcel Duchamp's *Nude Descending a Staircase* and Francis Picabia's *The Dance at the Spring*.

CUBIT, a measure of length frequently mentioned in the Bible, and in common use among the ancients. The cubit of the Hebrews was equal to 17.58 inches, English measure, and that of the Romans, about 17.4 inches. The word is from the Latin for *elbow*, as originally the cubit was supposed to be the distance from the elbow to the end of the middle finger.

CUCKOO, a bird common in warm countries and a summer resident in more northern lands. Altogether there are nearly 200 species known. In North America the rain crow or yellow-billed cuckoo is com-



CUCKOO

mon, but it is a shy bird, keeping in the woods and flitting about quietly, uttering hoarse chinking notes which people used to say foretold rain. It is a long, slender bird of

a pretty greenish-brown color, and builds its flimsy nest and rears its own young. The European cuckoo, however, lays its small egg upon the ground and then picks it up and deposits it in the nest of a smaller bird, where it is cared for by the unwilling mother (see *COWARD*). The song of this bird, which gave it its name, is much sweeter than that of the American species. The cuckoo of Africa and Asia is closely allied to the European cuckoo.

CUCUMBER, *ku'kum ber*, the familiar fruit of a vine which is closely related to the muskmelon, and which was introduced to the world from the East Indies. In Southern Europe it is cooked before being used as an article of food, but in North America it is used principally as salad or pickle. The varieties are numerous, and each has its particular value. In a wild state in tropical Asia, the cucumber is very bitter and almost poisonous, even now it occasionally happens that a fruit is found that is bitter throughout, and almost always near the stem there is a bitter section.

CU'FIG, or **KU'FIG**, a term derived from the town of Cufa, in the territory of Bagdad, applied to the written characters of the Arabian alphabet, in use from about the sixth century of the Christian Era until about the eleventh. The earliest copies of the *Koran* were written in these characters.

CULLOM, *SHELBY MOORE* (1829-1914), an American statesman, born in Wayne County, Ky. He was admitted to the bar in Illinois and began his practice in Springfield, where he was soon elected to the legislature; from there he was sent to Congress. From 1876 to 1883 he was governor of Illinois, in the latter year beginning a career of thirty years in the United States Senate as a Republican. He was one of the framers of the interstate commerce law of 1889, and was one of the commissioners to establish American government in Hawaii. In 1913 he was appointed commissioner in charge of the great Lincoln Memorial at Washington, D. C. Cullom was a friend of Lincoln, and in his later years looked much like the great President.

CUMBERLAND, Md., the county seat of Allegany County, 152 miles northwest of Washington, on the Potomac River and the Chesapeake & Ohio Canal and on the Baltimore & Ohio, the Pennsylvania, the Cumberland & Pennsylvania, and the Western Mary-

land railroads. There is an airport. It is the trade center of a large coal district, and in population and importance is the second city of the state. The industries include manufacturers of railroad material, glass works, tanneries, flour mills, steel and iron works and railroad repair shops. The place was laid out in 1785 on the site of Fort Cumberland, which was erected at the outbreak of the French and Indian War. Cumberland was incorporated as a city in 1850. It adopted the commission form of government in 1909. Population, 1920, 29,837, in 1930, 37,747, a gain of 26.5 per cent.

CUMBERLAND MOUNTAINS, a part of the Appalachian system. The several ridges of these mountains extend from West Virginia along the boundary of Virginia and Kentucky, across Tennessee into Alabama, and form a plateau about fifty miles wide. They rarely exceed 2,000 feet in height. They are covered with good timber, but the soil is not very rich. The famous Cumberland Gap, once a gateway to regions farther west, lies at the place where Tennessee, Virginia and Kentucky meet. See **APPALACHIAN MOUNTAINS**.

CUMBERLAND RIVER, a river which rises in Kentucky in the Cumberland Mountains, flows nearly westward into Tennessee, where it makes almost a semicircle, returns into Kentucky and finally empties into the Ohio at Smithland. It is about 680 miles long, and is navigable for steamboats to Nashville, nearly 200 miles from its mouth.

CUMBERLAND ROAD, a road constructed by the United States government, extending from Fort Cumberland, Md., to Vandalia, Ill., a distance of 800 miles. It was begun about 1806 and was finished about 1840. It was for years under Federal control and was commonly called the Great National Pike, but by 1856 each state through which it passed was controlling the section within its borders. It played an important part in opening the West to settlement and was for years the chief avenue of westward migration. Henry Clay was one of the most zealous advocates of the enterprise.

CUMMINS, *ALBERT BARTH* (1850-1926), an American lawyer and statesman, identified with the progressive wing of the Republican party. Cummins was born at Carmichaels, Pa. He practiced law in Chicago from 1875 to 1878, when he removed to Des Moines, Iowa. There he became prominent

in Republican politics, and from 1902 to 1908 was governor of the state, serving three terms. He achieved fame as an earnest advocate of tariff revision by the Republican party, a policy known for a time as the "Iowa idea." In 1908, on the death of Senator Allison, Cummins became United States Senator; at the election in 1909 he was re-elected for the full term, and was again elected for the term ending in 1921. He was prominently mentioned as a candidate for the Vice-Presidency on the Republican ticket in 1908, and in 1912 was an active candidate for the nomination for President.

CUNEIFORM, *ku né' form*, **INSCRIPTIONS**, the name applied to the wedge-shaped characters of the inscriptions on old Babylonian and Persian monuments, sometimes also described as arrow-headed or nail-headed characters. These characters appear to have been originally of the nature of hieroglyphs and to have been invented by the primitive Accadian inhabitants of Chaldea. From the Chaldeans they were borrowed, with considerable modification, by the conquering Babylonians and Assyrians, who were Semites by race and spoke an entirely different language. The use of the cuneiform characters, however, ceased shortly after the reign of Alexander the Great; and after the lapse of nearly 2,000 years it was doubted by many if the signs had ever had an intelligible meaning. They were even regarded by some as the work of a species of worm, by others as mere talismanic signs or astrological symbols. Gradually, however, through the efforts of Grotefend, Lassen, Rawlinson and other investigators, the means of translation were perfected.

Many of the inscriptions first discovered are in three different languages and in as many varieties of cuneiform writing. The most prominent, and at the same time the simplest and latest of these, is the Persian, with about sixty letters. Next older in time and much more complex is what is designated as the Assyrian or Babylonian system of writing, consisting of from 600 to 700 characters, partly alphabetic, partly syllabic. Lastly comes the Accadian inscriptions, the oldest of all, originally proceeding from a people who had reached a high state of civilization 3,000 years before Christ and whose language ceased to be a living tongue about 1700 B. C. The most celebrated trilingual inscription is that at Behistun, cut upon the

face of a rock 1,700 feet high, recording a portion of the history of Darius. The British Museum contains many thousands of inscribed clay tablets, cylinders, prisms and the like, the decipherment of which is still in progress. See ASSYRIA.

CUPID, according to classic mythology, the god of love. He was the son of Mars, the god of war, and Venus, the goddess of love. His attributes were the bow, quiver and wings, and he was represented in painting and sculpture as a chubby child with gauzy wings and roguish, dimpled face. Cupid loved a fair mortal princess, Psyche, who after many trials was granted immortality by the gods. As Cupid is the emblem of the heart, his love, Psyche, is the symbol of the soul. See PSYCHE.

CUPOLA, in architecture, a spherical, dome-like vault, on the top of an edifice, so called because of its resemblance to a cup. The Italian word *cupola* covers a circular building, like the Pantheon at Rome and the Round Temple of Vesta at Tivoli. The term is also applied distinctively to the concave interior, as opposed to the dome, which is the entire curved structure. The term *cupola* is commonly, though incorrectly, applied to any small dome-lantern or observatory projecting above a roof. See DOME.

CURCULIO, *kur kú'lé o*, a family of beetles with rough coats and long snouts, sometimes called *snout beetles*. Among the numerous species are some of the insects which prey on orchard fruits; the plum, peach, apricot, cherry and apple crops also are often seriously menaced by their ravages. During the winter the beetles hide in the bark, and when the spring arrives they emerge from their hiding places to feast on the flowers and foliage. The eggs are laid in the fruit, the female using her snout to press them into the pulp, and when the grubs are hatched they eat the fruit on the inside. Beetles can be killed with arsenate of lead solution, two pounds of which should be mixed with fifty gallons of water. Infested fruit should be shaken from the tree and destroyed, to protect the unspoiled crop.

CURFEW, *kur'fú*, the ringing of a bell at a certain hour of the evening, usually at nine o'clock, to indicate that all outdoor occupations must cease and that people must remain within doors. The custom was common during the Middle Ages and was introduced into England by William the Con-

queror. The law was repealed by Henry I in 1103, but the bell continued to be rung in many districts to modern times, and is still rung in a few small towns.

Curfew Must Not Ring To-night is a popular poem based on the custom. It tells the story of a girl in the Cromwell era in England who saved her lover from death by clinging to the bell clanger and thus preventing its sounding the hour set for his execution. The author is Rose Hartwick Thorpe.

CURIE, *ku're'*, PIERRE (1859-1906), and MARIE SKŁODOWSKA (1867-1934), French scientists, the discoverers of the wonderful properties of radium. Professor Curie was born in Paris, was educated at the Sorbonne, and later became professor of physics there. In 1898, after several years of investigation, Curie and his wife announced the existence of radium. In 1903 they were awarded the Davy Medal of the Royal Society and one-half of the Nobel prize in physics. After the death of her husband in 1905, Madame Curie, a Polish woman educated in Paris, succeeded him as professor of physics at the Sorbonne and in 1911 her further researches won for her the Nobel prize in chemistry. In 1921 she visited the United States, was enthusiastically received in scientific circles and presented with \$100,000 worth of radium.

Her eldest daughter, Irene (born 1897), was her associate in research after the death of M. Curie. Irene married Frederic Joliot, a fellow scientist, and they have since worked together. The two won the Nobel Prize in chemistry for 1935, for their discoveries in connection with the neutron. Madame Curie's younger daughter, Eve (born 1904), became a talented musician.

CURLEW, a genus of birds belonging to the same family as the snipe and woodcock. The birds have long, slender, partly naked limbs, short, rounded tails and very long, slender bills. In North America are found the *Hudsonian* and *Eskimo* curlews, which nest in the Arctic regions in summer and visit Southern South America in winter; and the *long-billed* curlew, found in various parts

of the United States. Its beak is sometimes eight inches long. All curlews build crude nests on the ground.

CURLING, a favorite Scottish winter game, played also in parts of Canada and the United States. Large, smooth stones having somewhat the shape of a flattened hemisphere, with an iron or wooden handle at the top, and from thirty to forty-five pounds in weight, are slid along a prepared course on the ice. The object of the player is to lay his stone as near to the mark as possible, to guard that of his partner which has been well laid before or to strike off that of his antagonist. Each player throws two stones, and then the count is made and the play resumed from the other end of the course. A series of match games is called a *Bonspiel*. International matches are played between Canadians and Americans.

CUR'ANT, the name of two well-known shrubs cultivated in gardens for their fruit. The red currant, which is used principally for jellies, is a native of Southern Europe, Asia and Americas. The white currant is a cultivated variety of the red. The black currant, native to most parts of Europe and found abundantly in Russia, has a strong taste and odor, but it is used for jelly and in making tarts and puddings, to which it adds excellent flavor. The dried currants of commerce are really raisins, a small variety of grape which originally came from Corinth and therefore received the name of currant.

CURRENCY. See MONEY.

CURRENTS, OCEAN. See OCEAN CURRENTS.

CUR'RIE, ARTHUR W., Sir (1875-1933), a Canadian military officer who gained renown in the World War as commander of the Canadian forces. He was born in the County of Middlesex, Ont., of Scotch-Irish parentage, attended the village school of Napperton, and completed his education at the Strathroy Collegiate Institute. After teaching school in Sydney, B C, he engaged for several years in the insurance business, ultimately becoming head of a real estate firm. In 1895 Currie enlisted as a private in the Fifth Regiment of the Canadian Gar-



MADAME CURIE



CURLING STONE

rison Artillery in British Columbia, rose steadily to the rank of Lieutenant-Colonel, and in 1913 was transferred to the Fiftieth Gordon Highlanders of Canada, Victoria

Currie was one of the first Canadians to volunteer for active service at the outbreak of the World War. As soon as mobilization orders were received he entered with his Highland Regiment for the concentration camp, Valcartier, in Quebec, was soon made brigadier-general, and eventually reached Flanders. In September General Currie succeeded to the position of General Commanding Officer of the First Canadian Division; it was this division that won the famous Battle of Vimy Ridge.

In June, 1917, General Currie succeeded Sir Julian Byng in command of the Canadian army in France, and so continued to the end of the war. He received many honors from Great Britain and France.

From 1920 until his death Sir Arthur was principal and vice-chancellor of McGill University in Montreal.

CURTIS, GEORGE WILLIAM (1824-1892), an American writer, orator and publicist, born in Providence, R. I. He was a member of the Brook Farm Community for eighteen months (see BROOK FARM), and after leaving there he traveled for a time in Europe and the Orient. For years he was editor of *Putnam's Monthly*, and he began in 1853 the "Editor's Easy Chair" papers in *Harper's Monthly*. On the establishment of *Harper's Weekly* he became one of its editors. After the Civil War he devoted himself to reform movements, especially civil service reform, in the agitation of which he was long the most conspicuous figure. All his works are marked by grace of diction, dignity and high moral sentiment. A novel, *Trumpets*, and many of his other books appeared first in periodicals. Perhaps the best known of his writings is *Prue and I.*

CURTISS, GLENN HAMMOND (1878-1930), an American aviator, famed for his invention of the flying boat, and for many brilliant flights and demonstrations. He was born at Hammondsport, N. Y., and from his boyhood was interested in mechanical vehicles. In 1906 he came into wide notice by establishing a new speed record when he rode a specially constructed motorcycle (his own invention) at Ormond Beach, Fla., making a mile in 26.4 seconds. In 1908 he won the *Scientific American* cup with an aeroplane

at Hammondsport, and the next year he carried off the International cup at Rheims, France. In 1910 he made a flight from New York to Albany (150 miles) in two hours, twenty-one minutes, winning the New York *World* prize of \$10,000. Later Curtiss received the Aero Club of America trophy for his invention of the hydroaeroplane and the flying boat. The Smithsonian Institution awarded him a medal in 1913. Curtiss ranks second only to the Wright brothers in his contributions to the science of air navigation. See **FLYING MACHINE**.

CURVE, a line which changes its direction at every point. A line which curves continuously at a uniform rate, having all its points equally distant from a point within, is called a circle (which see). The curved line has an important place in higher mathematics.

CURWOOD, JAMES OLIVER (1878-1927), an American author, was born at Owosso, Mich. He attended the University of Michigan, and for seven years was engaged in newspaper work, for a time as editor of the *News-Tribune*, Detroit. From 1907 he devoted himself to writing novels, depicting life in the Canadian northlands, on which he was a foremost authority. He was an active worker for wild life and forest conservation. Among his best known books are: *Flower of the North* (1912); *Nomads of the North* (1919); *The Valley of Silent Men* (1920); *The Alaskan* (1923); *A Gentleman of Courage* (1924); *The Ancient Highway* (1925); *Black Hunter* (1926); and *The Plains of Abraham* (1927).

CURZON, GEORGE NATHANIEL, Lord (1859-1925), an English diplomat and statesman, born at Kedleston and educated at Balliol College, Oxford. He first became private secretary to the Marquis of Salisbury. Afterwards he sat in Parliament for twelve years.

In 1898 Lord Curzon was appointed Viceroy and Governor-General of India, a position which he held until 1905. His administration was characterized by energy and ability and was notable for the aid which he gave to education in the Empire, the strengthening of the military forces and his open opposition to the encroachments of Russia upon English territory in the East. On his return to England he took a seat in the House of Lords. In 1895 Lord Curzon married Miss Daisy Leiter of Chicago. In 1916, ten years after her death,

he married Mrs Grace Duggan of Buenos Aires. In January, 1819, Lord Curzon was made a member of the new Cabinet organized by Lloyd George, becoming President of the Council and leader in the House of Lords.

CUSHMAN, CHARLOTTE SAUNDERS (1816-1876), an American actress, famed for her interpretation of tragic rôles. In 1915 she was awarded a place in the Hall of Fame (which see), and was the first stage personage to receive this honor. Miss Cushman made her first appearance in opera and scored a distinct success, but the loss of her voice made her decide to study for the drama. Her first rôle was *Lady Macbeth*, which remained throughout her career her greatest part. Among her other rôles were *Juliet*, and *Meg Merrilles* in Scott's *Guy Mannering*. Although most famous in tragedy, she was very successful, also, in such rôles as *Lady Teazle*. She retired from the stage in 1874.

CUSTER, GEORGE ARMSTRONG (1839-1876), an American soldier, the hero of a battle with the Sioux Indians. He was graduated at West Point, and at the outbreak of the Civil War was given a commission in a cavalry regiment. General McClellan was so impressed by his energy and bravery that he appointed him aid-de-camp. Captain Custer took the first colors captured by the Union army. In 1863 he was appointed brigadier-general of volunteers, and he gained the rank of major the same year. For gallantry at the Battle of Winchester he was made brevet colonel and major-general of volunteers. After the war, he served on the Great Plains, and in June, 1876, his whole command was defeated and slain on the Little Big Horn, by the confederate Sioux under Sitting Bull. The spot has become a national cemetery.

CUSTOMS DUTIES, the taxes levied upon goods passing from one country to another. The system of customs duties dates probably as far back in history as ancient Greece, though the name is of comparatively recent origin. This arose in the long conflict between the Crown and Parliament in England over the right of taxation. To meet the claims made by the House of Commons to the exclusive right to vote all supplies, it used to be maintained that there were certain duties on exportation and importation to which the crown had acquired a right by *custom*; and the name thus acquired was retained after the power claimed by

lower branch of Parliament had been settled by permanent legislation. The first custom-house was erected in London in 1304.

Customs duties are levied on incoming goods, so that the term is practically synonymous with *import duties*. They are of two kinds, *specific*, that is, reckoned on the quantity (weight or number), and *ad valorem*, reckoned on the value of merchandise. The former are far more easily assessed and collected. A bitter controversy has always been waged over the expediency of customs duties between the advocates of absolutely *free trade*, those who wish to have no impediment to the free transfer of goods, and the *protectionists*, who wish to set up duties, by which to exclude foreign goods from competition with those of home production. (See *TARIFF; FREE TRADE*.)

Upon the organization of the United States government after the close of the Revolution the system of customs duties then in operation in England was adopted with scarcely any modification, under the direction of Alexander Hamilton, the first Secretary of the Treasury, the first custom-house being established in New York in 1799. Among the especial features of the new customs system was that of debentures, or drawbacks, which were certificates entitling an exporter of imported goods to a rebate of duties paid on their importation, if he wished to re-export them. Subsequently the object thereby accomplished was more directly facilitated by permitting the importer to "bond" his goods in government warehouses until he was able to pay the duties; and later on the practice was modified still more in favor of the importer by permitting him to take out of "bond" from time to time portions of the invoice of goods consigned to him, paying the proportionate amount of duties. If goods are to be re-exported they can be withdrawn from bond without the payment of duties. This system of *bonded warehouses*, which is now a feature of the customs service in every civilized country of the world, was embodied in an act of Congress passed in 1846, known as the Walker act.

In normal times it is intended that the moneys received from customs and from the collection of internal revenue (which see) shall defray a very considerable part of the expenses of the national government.

CUTLER, MANASSEH (1742-1826), a colonial clergyman, physician, scientist, and

statesman, who made a marked contribution to the settlement of the Northwest Territory. He was born in Connecticut. After graduation from Yale College he accepted a Massachusetts pastorate, the while studying medicine that he might be able better to serve his village, which had no physician. In science he published the first systematic classification of New England plant life. In 1786 he helped to organize the Ohio Company (which, see), and it was he who succeeded in purchasing from Congress 1,500,000 acres of land in the new western territory for eight cents per acre, after others had failed. While dealing with Congress, he helped to draft the Ordinance of 1787 (which see), and the next year he was leader in founding the town of Marietta.

CUTTLEFISH, the common name for certain mollusks, generally applied to the particular species from which sepia is prepared (see *SEPIA*). A small shell or bone, sometimes called the *pen*, is inside the animal, and this is the cuttlefish bone placed in birdcages. When a cuttlefish is pursued and in danger of being captured, it throws out from a bag a black substance which darkens the water and enables the animal to escape. It is from this substance that sepia is obtained. All cuttlefish are marine animals, and in the tropics some very large specimens have been found.

CUTWORM, a caterpillar which preys on wheat, corn and other grains and on garden vegetables. The cutworms feed at night, and by day remain in hiding underneath the soil. Usually they cut off the plant attacked close to the ground, but some cutworms climb trees and sever buds and tender leaves. These pests may be destroyed with poison sprays. Where bits of withered vegetation show the presence of cutworms, the earth should be dug over and the worms killed. Cutworms are the larvae (young) of a genus of night moths.

CUVIER, *koo vye'*, GEORGE LEOPOLD CHRISTIAN FREDERIC DAGOBERT, Baron (1769-1832), a distinguished French naturalist, born at Montbéliard. His lectures on natural history, distinguished not less for the elegance of their style than for profound knowledge and elevated speculation, were attended by all the accomplished society of Paris. In 1800 he was made professor of natural history in the College of France. Under Napoleon, who fully recognized his

merits, Cuvier held important offices in the department of public instruction. In 1819 he was received among the forty members of the French Academy. Among his best-known works are *An Elementary Table of Animals, Lessons in Anatomy and The Animal Kingdom*.

CYANOGEN, *si an'o jen*, a compound of carbon and nitrogen. It is a colorless gas of a strong odor resembling that of peach pits, and burns with a rich purple flame. Cyanogen is highly poisonous. It unites with oxygen, hydrogen and most nonmetallic elements, as well as with the metals, forming cyanides. Combined with hydrogen it forms prussic acid, which is the most powerful poison known.

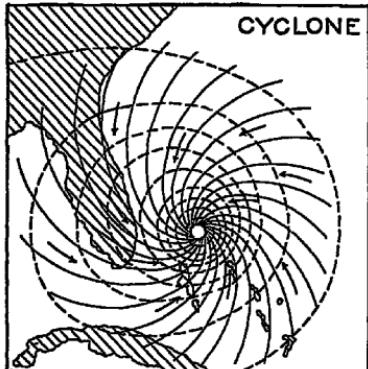
CYCADS, *si'kads*, a family of plants resembling palms or ferns in their general appearance, but more nearly related to the pines. The leaves are large and featherlike, and usually rolled like a crozier when in bud. All are natives of warm regions, and many are handsome plants. Fossil remains show that cycads are trees of great antiquity and that they once formed a much larger part of vegetation than they do at the present day.

CYCLADES, *si'kla dees*, a group of islands in the Grecian archipelago lying southeast of Greece, in the possession of Greece, forming a separate province. The largest islands belonging to this group are Andros, Paros, Tenos, Delos, Naxos and Rhenia. The islands are mountainous and have productive soil. Grapes and olives are raised, and fishing is one of the most important occupations of the people. Hermopolis, the principal trade center, is situated on the island of Syra. Much valuable building stone, including marble, is obtained from the Cyclades. Population, about 130,000.

CYCLAMEN, *si'lah men*, a genus of primroselike, bulbous plants, natives of Europe and Asia, but now commonly grown in the United States and Canada. They are all herbs with handsome, white, rose-colored or purplish flowers, and are favorite greenhouse plants. The leaves, which are large, heart-shaped and variegated in color, add much to the beauty of the plant. The flowers are scentless. In the United States the Persian variety, best known, is valued as a house plant.

CYCLONE, *si'k lone*, a circular, or rotary, storm or system of winds, varying from fifty to 500 miles in diameter and revolving

around a center, which advances at a rate that may be as high as forty miles an hour. The term is popularly applied to the destructive wind storms common in the Mississippi Valley, but these are technically known as tornado (which see). Cyclones of greatest violence occur within the tropics. Two storms in different hemispheres revolve in opposite directions. In the southern hemisphere the direction of a storm is like that of the hands of a clock, and in the northern hemisphere it is opposite to that of the hands of a clock. The cyclones of the West Indies



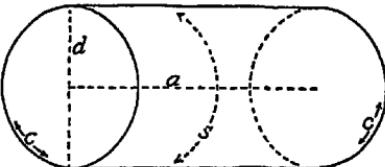
are described in the article HURRICANE. An anticyclone is a storm of opposite character, the general tendency of the winds being away from the center. The anticyclone usually follows the cyclone and produces fair weather. Cyclones are preceded by a singular calm and a great fall of the barometer. Nearly all storms are cyclonic in their nature, but in the temperate regions the movements are so mild that the rotary motion of the storm is lost sight of except by trained observers of the weather bureau. See STORMS.

CYCLOPS, *si'klops*, in Greek myths, a fabled race of one-eyed giants, the sons of Uranus and Ge (Heaven and Earth), slain by Apollo. They were usually represented as a numerous race living in Sicily and rearing cattle and sheep, but later traditions describe them as the servants of Vulcan working under Aetna and engaged in forging armor and thunderbolts.

CYLINDER, *si'līnd'ur*, a circular solid whose two bases are equal parallel circles, and whose diameter is the same throughout its length. The distance between the circular

bases is the altitude of the cylinder; its curving surface is the lateral or convex surface.

Volume of a Cylinder. The volume of a cylinder is equal to the area of one of the bases multiplied by the distance between



EXPLANATION OF THE CYLINDER.

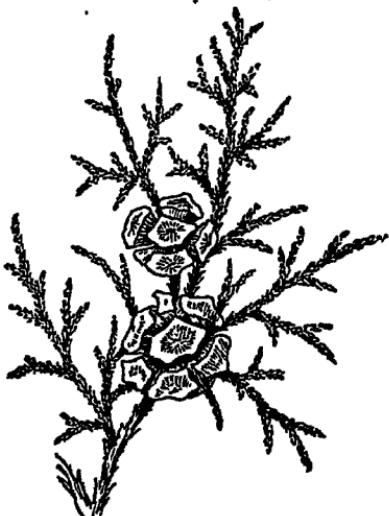
a, altitude, *c*, circumference of base, or perimeter; *d*, diameter, *s*, lateral surface them, or the altitude. To find the area of a base, use the formula employed in finding the area of a circle: $\text{Area} = 3.1416 \times \text{radius}^2$ (see CIRCLE). Therefore, volume of cylinder = $3.1416 \times \text{radius}^2 \times \text{altitude}$. See MENSURATION, subhead *The Cylinder*.

CYMRU, *ki'mri*, a branch of the Celts. The Cymri appear to have succeeded the Gaels in the great migration westward, and to have driven the Gaelic branch into Ireland, the Isle of Man and the Highlands of Scotland, while they themselves occupied the southern parts of Britain. At a later period they were themselves driven out of the Lowlands of Britain by the invasions of the Angles, Saxons and Jutes, and were compelled to take refuge in the mountainous regions of Wales, Cornwall and the northwest of England. Wales may now be regarded as the chief seat of the Cymri.

CYNIC SCHOOL OF PHILOSOPHY, or **CYNICS**, a group of Greek philosophers of the fourth century B C, who developed a system of doctrines based upon the principle that virtue is the only good. As defined by Antisthenes, virtue is practically a wise direction of life, and of itself it constitutes happiness. Since continued happiness is not possible if wants and desires which may not be satisfied are regarded, virtue consists in living, as much as possible, in independence of disturbing wishes. The simplest, most natural life is desirable. Art, literature, science, wealth, honor and pleasure are to be discarded, because they give rise to wants that cannot be satisfied. The most ardent follower of this school was Diogenes (which see), by whom its doctrine was carried to extremes in the ordinary affairs of life.

In modern speech a *cynic* is one who disbelieves in or doubts the wisdom of social usages, or of personal character or motives, and expresses his doubts by sarcasm or sneers.

CYPRESS, *cy'pres*, a genus of cone-bearing trees, distinguished by their small, dark, evergreen, opposite leaves and their tiny, solitary flowers. The best-known species is the *common cypress* of Europe, which is a dark-colored evergreen, with extremely small leaves, which entirely cover its branches. It has an almost quadrangular shape, except at the top, where it becomes pyramidal. Cypress trees are rather dark and somber in



CYPRESS LEAVES AND CONES

appearance and have long been used for decorative purposes in cemeteries; and branches of cypress were formerly worn at funerals as emblems of mourning. The wood is hard, compact and durable and has a reddish color and pleasant odor.

The *bald cypress*, common to the swamps of the Southern states, is a deciduous tree and one of the most valuable of timber trees. Although the wood is soft, its remarkable durability under water makes it of great value, and the size of the tree furnishes timbers of large size. In the regions where the tree grows to best advantage, it forms great forests, covering many square miles of territory. A peculiar feature of the tree is the development upon its roots of peculiar knots,

or growths, called *knees*, which sometimes reach a height of ten feet and when fully grown have their tops above the water. It is not well understood of what use these knees are to the trees. In the United States the annual lumber cut of cypress amounts to nearly 1,000,000,000 board feet and is valued at more than \$20,000,000.

CYPRUS, *cy'prus*, an island lying forty miles south of Asia Minor in the Mediterranean Sea, belonging to Great Britain. It is the third in size among the Mediterranean islands, ranking next to Sicily and Sardinia, and has an area of 3,584 square miles. In 1931 the population, not including military forces, was 348,000. The principal towns are Nicosia, the capital, 23,667; Limassol, 15,350; and Larnaca, 11,872. Agriculture is the chief occupation of the people, and the most important products are wheat, barley, vetches, oats, olives, cotton and grapes. The government has encouraged farming by constructing irrigation works, and there is a Forest Department which is helping to preserve and develop the timber.

Copper mining, anciently of great importance, has been resumed, and the island is one of the world's few sources of asbestos. It is of interest to know that the derivation of our word *copper* may be traced to *Cyprus* (see COPPER). The island has over 700 miles of good motor road, cable connection with Alexandria and Haifa, a railway, and telegraph service. Cyprus has been a possession of many different countries; from 1878 to 1914 it was administered for Turkey by England. On the outbreak of the World War it was annexed to the British Empire.

CYRUS, *si'rus* (about 600-529 B. C.), king of Persia, a celebrated conqueror, called *Cyrus the Great*. According to Herodotus, he was the son of Cambyses, a famous Persian, and of Mandane, daughter of the Median king Astyages. Herodotus states that Astyages, troubled by a prophecy that his grandson was to dethrone him, gave orders that Cyrus should be destroyed immediately after his birth, but the boy was saved by the kindness of a herdsman and at length was sent to his parents in Persia. He soon gathered a formidable army, conquered his grandfather and became master of Media and founder of the Medo-Persian Empire. According to the records, he proved a wise and moderate king. After his conquest of Media and Persia he invaded Lydia, conquered the



LIFE IN CZECHOSLOVAKIA

These women from the farms don their characteristic colorful raiment and go to town on a shopping tour. One does not have to guess that American women prefer their dainty footwear to the boots that are a necessary part of the Czech costume. At right, a street in the clean city of Bratislava, called Pressburg before the World War, when it was under Austro-Hungarian rule.

Ewing Galloway



country and then turned against Babylon, which fell almost without a contest before the victorious arms of the hosts of Cyrus. The conqueror entered the city in triumph and made himself king. Here he showed his generosity toward conquered peoples by contributing to the release of the Jews from captivity. Cyrus was killed in an expedition against the Scythians, who dwelt north of his domains.

CYRUS, (9-401 B. C.), called *The Younger*, to distinguish him from Cyrus, the founder of the Medo-Persian monarchy, was the second son of Darius II. He formed a conspiracy against his elder brother, Artaxerxes Mnemon, and was condemned to death, but was released at the request of his mother and made governor of Asia Minor. Here he secretly gathered an army, of which 10,000 were Greek auxiliaries, and marched eastward. His brother with a large army met him in the plains of Cunaxa (401 B. C.), and in the battle which followed, Cyrus was slain. The account of the expedition and the retreat of the Greek soldiers is given by Xenophon in the *Anabasis*.

TSAR, or **TSAR**, *tsahr*, a title borne by the emperors of Russia before the revolution of 1917. The word is a corruption of the Roman title *Caesar*, first adopted in 1547 by Ivan the Terrible. The empress of Russia bore the title *tsarina*, while the heir apparent and his wife were known as the *tsarevitch* and *tsarevna*.

CZECH, *chech*, a division of the Slavic race occupying parts of Bohemia, Moravia, Austrian Silesia and Northern Hungary, or Slovakia. Bohemia is their great stronghold, and Prague is the chief center of Czech culture. The Slovaks of Moravia and Slovakia are their nearest kindred; in fact, the Czechs and Slovaks are practically one race, and speak nearly the same dialect. These peoples were under Austrian rule for centuries, but they were restive and intensely conscious of a national spirit that found definite expression when the World War created a crisis in the dual monarchy of Austria-Hungary. The result was the formation of the republic of Czechoslovakia. Czech literature has had a continuous existence from the ninth century, and is represented by works of poetry, fiction, science and history. At Prague (now Praha) there is a Czech university and a national theater. See the article following, describing the Czech country.

Related Articles Consult the following titles for additional information

Bohemia
Czechoslovakia

Prague
World War

CZECHOSLOVAKIA, a new Central European republic, formed in 1918 from the ruins of the Dual Monarchy, Austria-Hungary. It took from Austria its crownlands of Bohemia, Moravia, and Silesia, and from Hungary a large part of Slovakia. The boundaries were fixed on the theory of "self-determination of peoples" as to their racial divisions. The area of the country is 54,226 square miles, the population in 1930 was about 14,760,000. Prague, now known as Praha, in Bohemia, is the capital city. The chief element of the population is Czech and Slovak. The Czechs and Slovaks are practically one race and speak about the same language (see **CZECH**).

For many years before the World War the national movement of the Czech-Slovaks had been causing the Austrian government great anxiety. In Bohemia, especially, the agitation for independence could not be checked, and the bitter opposition of the people to the cause of the central empires added considerably to the troubles of the dual monarchy throughout the war. Thousands of Czechs and Slovaks deserted to the Russians, and when Russia withdrew from the war, the Czech-Slovak regiment started for France by way of Siberia. While on the march they came into conflict with Russian revolutionists, and were kept in Siberia by the allies to guard the Trans-Siberian Railroad. Others of their kindred formed legions and fought for the allies in France and Italy.

A national Czech-Slovak Council was organized in Paris under the presidency of professor Thomas Masaryk, of the University of Prague, and in June, 1918, the independent Czech-Slovak state was officially recognized by France. Great Britain gave similar recognition in August, and the United States followed in September. On October 19 a declaration of independence was issued in Paris, as by that time the Czechs had become masters in Praha and had placed Czech money in circulation. The close of the World War made the impending break-up of Austria-Hungary an accomplished fact, and the republic of Czechoslovakia was duly erected, with Professor Masaryk as its first President.

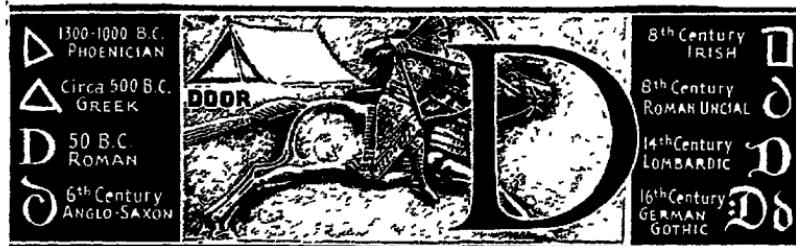
During 1920 and 1921 Czechoslovakia, Rumania, and Jugo-Slavia entered into a political and economic agreement, this union for mutual aid and protection being called the Little Entente. They sought the aid of France in maintaining their sovereignty and sealed the pact by a treaty.

It was conceded that President Masaryk could retain the post he honored for as long as he lived, and such a life tenure was offered him. However, in 1935, at the age of 85, he resigned the cares of state, and in his place Eduard Benes (born 1884) was chosen as President. The latter had been Prime Minister from the time of the organization of the republic, and was considered one of the strongest statesmen of Europe.

The home of the Czechs and Slovaks is one of the richest agricultural sections of Europe; all the temperate zone products are raised, especially the hardy grains, potatoes, and sugar beets. One-third of the area is yet heavily wooded. The country possesses abundant supplies of coal and iron. About 12,000 factories attest a flourishing industrial life; of these, more than 100 are sugar factories. The majority of the people are Roman Catholics; other religions find full freedom of worship.

Related Articles. Consult the following titles for additional information
Austria-Hungary Little Entente
Benes, Eduard Masaryk, Thomas
Bohemia Moravia
Hungary World War

CZERNOWITZ, *cher'no vits*, a city in Rumania, now known as Cernautz, before the World War was the capital of the Austrian province of Bucovina. It has a mixed population, chiefly Rumanians, Germans, Jews, Poles, and Greeks. The city is one of the country's chief railroad centers, with lines running to all of its northern and western neighbors. Among the prominent buildings are the archiepiscopal palace, the Greek-Oriental cathedral and a handsome Jewish synagogue. The educational institutions include a university, with a library exceeding 100,000 volumes, a gymnasium and industrial and trade schools. There are manufactures of machinery, oil, lumber and beer. During the World War the city was thrice captured by the Russians, but was each time reconquered. At the close of the war, in 1918, when Austria-Hungary ceased to exist, Bucovina (now Bucovina) was claimed both by Rumania and the Ukraine. The decision was finally made in favor of Rumania, and it is now an integral part of that state. Population, 111,112, in 1931.



D, the fourth letter in the alphabet. In form the English D is the same as the Latin D, which was developed from the Greek Δ. This, in turn, was derived from the Phoenician character, which was probably an outgrowth of an original hieroglyphic representation of a door. The Δ does, in fact, still retain a resemblance to a tent door. In corresponding words of related languages, d is often interchanged with t, which it resembles in its mode of pronunciation.

In music D is the second note in the natural, or C, scale. As an abbreviation D represents five hundred, and when a line is placed above it, D represents five thousand.

DAB'CHICK, a name which in the United States is commonly given to the pied-billed grebe. See GREBE.

DACE, *dase*, a river fish which attains a length of about ten inches, found in central North America from the eastern shores to the Missouri River. It is bluish above and creamy below, and there is a slight yellowish band on the side. The fish described is commonly called the horned dace, because it bears a black spot on its dorsal fin. Other names for the dace are *dare* and *dart*.

DACHSHUND, *daK'shoont*, a strangely formed dog with short legs and a long, round body, formerly used in the central part of Europe in hunting foxes and badgers. Though the dachshund is grotesque in appearance, it is prized as a household dog in many parts of the world, particularly in Germany, because of its intelligence and courage. The animal has broad, rounded ears, a long, cone-shaped head, long, tapering tail and paws turning outward. The short, silky coat may be reddish-brown, black and tan, gray and tan or spotted.

DADDY-LONG-LEGS, the popular name of a spiderlike insect, known also as the American *harvestman*. It has a body usually

oval or globose, and long, exceedingly slender legs, which are rather elevated in the middle, so that when the animal walks its body almost touches the ground. It has a peculiar, disagreeable smell, and feeds upon insects. Often the daddy-long-legs is seen in great numbers in barns or other sheltered places. In England the term is applied to the crane fly.

DAEDALUS, *ded'a lus*, a mythical Greek architect and artisan. He built for the king of Crete the labyrinth in which the Minotaur was confined, but having seriously offended the king, he was himself imprisoned. To effect his escape and that of his son, he made two pairs of wings, which he fastened on their shoulders. The son, Icarus, in flying across the sea, rose so high that the heat of the sun melted the wax with which the wings were fastened together, and he fell into the sea and was drowned. Daedalus was unharmed. See MINOTAUR.

DAFFODIL, the popular name of certain species of narcissus, which are among the earliest flowers of spring. The trumpet daffodil, a popular variety, has its flower at the end of the stalk, growing at a right angle to it.

DAGO, *dah'go*, **ISLAND**, an island in the Baltic Sea, politically a part of Estonia, situated near the entrance to the Gulf of Finland. Its surface consists of chalk beds and swampy lowland, and the inhabitants, who number about 16,000, engage chiefly in fishing and agriculture. The island is 370 square miles in area. It was captured by the Germans in 1918, after having been a Russian possession since 1721. At the close of the war the island was given to Estonia. See ESTONIA.

DAGUERREOTYPE, *da ger'o type*, the original photographic process, so called from its inventor, Daguerre, (see below). It con-

sisted in sensitizing a silver plate with the vapor of iodine and then placing it in a camera obscura, previously focused, and afterward developing the picture by vapor of mercury. It was then fixed by immersion in hyposulphite of sodium. After thorough washing and drying the picture was covered



DAHLIAS

with glass to prevent its being rubbed off. The process is now replaced by photography (which see).

Louis Jacques Mandé Daguerre, *da gər'* (1789-1851), was originally a scene-painter at Paris, but as early as 1814 his attention was directed to the subject of photographing pictures on metal. In 1833 he succeeded in perfecting the new photographic process, which caused a great sensation in the world of science. Daguerre was made an officer of the Legion of Honor, and an annuity of 6,000 francs (\$1,200) was settled on him.

DAHLGREN, *dal'gren*, John Adolph (1809-1870), an American naval officer and artillerist. He entered the navy in 1826. In 1850 he brought forward an invention of a type of cannon, which was named for him and which was of great value during the

Civil War, but later became obsolete. At the beginning of the war he became commandant of the Washington navy yard, and in 1863 was made rear admiral and was placed in command of the South Atlantic blockading squadron. In 1866 he commanded the South Pacific squadron, and in 1868 took charge of the bureau of ordnance in Washington. In the following year he was again appointed commandant of the Washington navy yard.

DAHLIA, (or *dale'ya*), a genus of plants belonging to the composite family, so called after the Swedish botanist Dahl. Dahlias are native of Mexico, but they are extensively cultivated in the United States, Canada and Europe, in an immense number of varieties, producing large and beautiful flowers of almost every imaginable color.

DAHOMEY, *da ho'mi*, now a part of French West Africa, was formerly an independent negro kingdom. Its northern boundary is not well defined, but it extends in a narrow belt southward between Togo and Nigeria to the Gulf of Guinea, an Atlantic arm, where is found its chief city and seat of government, Porto Novo, which has 20,000 inhabitants.

The area of Dahomey is 41,302 square miles, and its population was 1,133,300 in 1933; only 900 are white. The natives are of pure negro stock, and wherever the soil is fertile they are good agriculturists, raising corn, yams and potatoes. The forests contain cocoanut palms and oil palms, and a decreasing supply of rubber.

France gained a foothold here in 1851 and gradually extended its influence in the form of a protectorate (which see) until 1894, when the whole kingdom became a part of French West Africa.

DAIRYING, or DAIRY HUS'BANDEY, that branch of agriculture which is given to the production of milk and its various products. Dairying has always been given some attention on farms, and in Denmark and Holland it has been the leading agricultural occupation for many generations. Dairying as a distinct occupation in North America has developed since 1860, the year in which the first cheese factory was built.

Dairying is carried on for three purposes — selling milk, making butter and making cheese. Milk is sold to supply the consumers in cities and for the purpose of making condensed milk. The by-products of milk are

skim milk, buttermilk and whey. These are usually mixed with meal and fed to swine. Whey and skim milk are also used extensively in the manufacture of milk sugar.

It was formerly supposed that dairying could be carried on with profit only within a limited section of the country and during the summer months; but the use of scientific methods has shown that, with proper care, good butter and cheese can be made in nearly all parts of North America, and that dairying can be made profitable during the entire year.

The rapid growth of cities and the enormous development of transportation facilities have exerted a great influence on the progress of this industry. As the growth of the cities has increased the dependence of millions of inhabitants on the farmer for food, the demand for dairy produce has greatly increased, while the improved means of transportation have made possible the delivery of the produce to the cities at a profit to the farmers. The general changes in the character of industry have thus led many to adopt dairy farming as a specialty instead of following it incidentally. The United States is the leading dairy country in the world. It contains over 23,000,000 milch cows, has a total milk production of nearly 85,000,000,000 pounds a year, and has a correspondingly large production of butter, condensed milk and cheese.

The Dairy. Some of the leading scientific principles of animal husbandry are readily illustrated by showing their application to a dairy farm. To conduct a dairy successfully the dairyman must give careful attention to the following particulars:

- 1 Careful selection of his herd
- 2 The construction and maintenance of suitable stables and other buildings necessary to the work
- 3 Providing the right sort of pasture
- 4 Providing the right sort of feed in addition to pasture
- 5 Facilities for the care and marketing of the dairy products.

Neglect of any one of these points is liable to lead to failure in the enterprise.

The Herd. The cows should be selected with reference to the main purpose for which the dairy is conducted. If the dairy is to supply milk for city markets, the cows should be chosen with due regard to the quantity of milk which they produce. If the dairy is devoted to supplying the market

with butter, more regard must be paid to the quantity of butter fat in the milk than in the former case.

Experienced dairymen are good judges of cows and seldom make mistakes in the selection of herds. For the benefit of those of less experience the following points, taken from Brook's *Animal Husbandry*, are given:

Head—Small, lean and bony, with large muzzle and mouth. The nose and face should be free from fleshiness.

Eye—Full, large, lively in expression, but at the same time mild, clear and bright. The whole expression of the face and eye should be motherly.

Forehead—May be either straight or dishing, but the latter gives a more well-bred appearance.

Ear—Thin, large, active, and for most breeds should be of an orange color within.

Neck—Should be rather thin, especially near the head, and long. It should be free in most breeds from loose, pendent skin.

Horns—Should be of moderate size.

Shoulders—The animal at the shoulders may be from two to four inches lower than at the hips. The shoulders themselves should be thin, especially at the top, lean and bony.

Chest—Should be deep, that is, it should have a large measurement from top to bottom. It is less broad and roomy than in beef breeds. The section through the animal behind the shoulders should have an elliptical outline. Too great thinness behind the shoulders is, however, a mark of weak constitution.

Back—Should be rather long and rugged. The vertebrae of the backbone should be rather wide apart so that the fingers may be pressed down between the points in the ridge of the back. This is only one feature of the general looseness of structure which is looked for in the dairy type, as contrasted with the close, compact structure which is desirable in the beef type.

Loins—Should be fairly broad, the hip bones rather high and well apart. The bones, moreover, are often rather farther forward than in the beef type. This gives a long and strong hind quarter.

Thighs—The thighs should be thin, especially on the inside, in order to give room for a large udder.

Flank—The flank is well up, and rather thin.

Legs—The legs should be rather short and the hind legs may be rather crooked. The bones of the legs should be moderately fine. The forelegs are comparatively near together, the hind legs wide apart.

Tail—The tail should be long and fine, with a long switch. A long tail is believed to indicate that the vertebrae of the backbone are somewhat loosely connected, which, as has been pointed out, is considered highly desirable.

The General Outline—When looked at from the side, the general outline should be that of a wedge, the upper line, or line of the backbone, and the lower line, or the line of the belly, approaching each other from behind. When looked at from behind or from above, the animal should also present a wedge shape, the lines of the wedge approaching each other from rear to front. The dairy cow, therefore, shows a double wedge. The ribs, to harmonize with this general wedge shape, are rather flat immediately behind the shoulders. At this point they do not spring out very widely, but toward the posterior part of the animal the ribs spring out from the backbone more and more broadly in order to give room for large internal organs "for a big workshop."

The Udder—The udder should not be very pendent, but should obtain capacity by breadth, being wide from side to side, extending well forward, well backward also, and high up between the thighs. It should be broadly and firmly attached to the abdomen. The skin of the udder should be thin and delicate. The udder should be well filled out at the bottom between the teats, and the latter should be wide apart, squarely placed, and of good size.

A daily record of each cow should be kept and those that do not reach the required standard should be sold or fattened for beef and their places taken by others. Only the calves from the best milkers should be retained for future additions to the herd. In this way the strain of the herd will be strengthened from year to year. The record should enlighten the dairyman concerning two points: the average daily quantity of milk given by each cow and the length of time from calving before the quantity of milk begins to diminish. The most profitable animals are good milkers for a long time. They may not produce such large quantities of milk while fresh as some others, but their record for six months or a year shows them to be far more profitable. It costs no more to keep a good cow than a poor one, and the first is kept at a profit, while the second is kept at a loss.

The next thing necessary is a milk test which will show the amount of butter fat as well as the quantity of cream. This test should be made by an expert in a creamery or butter factory if possible, because in these places the necessary apparatus is at hand and an expert is usually in charge. If, however, the farmer is so situated that he must make his own test for milk, by sending to his experiment station for directions, he will receive such assistance and

Outline on Dairy Products

I. MILK

- (1) Description
- (2) Composition
 - (a) Water
 - (b) Casein
 - (c) Sugar
 - (d) Fat
 - (e) Salt
- (3) Uses
 - (a) Food
 - (b) Basis for butter, etc.

II. BUTTER

- (1) Manufacture
- (2) Packing and shipping
- (3) Uses

III. CHEESE

IV. BY-PRODUCTS

- (1) Oleomargarine
 - (a) How made
 - (b) Legal restrictions
 - (c) Tax
- (3) Condensed milk

Questions on Dairying

What work is performed by the separator?

What is a creamery? Generally located where?

What causes milk to sour? Give uses of sour milk. What is whey?

Name the different kinds of cheese

What foreign country is noted for its cheese?

How is milk regarded as a diet? Why should it be drunk slowly?

What makes cream rise to the top?

How is it possible for milk to be the means of spreading disease?

Name some of the dishes prepared in cooking whose foundation is milk or cream.

Is milk an absorbent? What dangers lie in this fact? What are some of the rules for the taking care of milk?

In what ways can milk be adulterated?

guidance as will enable him to make the test successfully.

The Stable. Milk can be produced only from healthy cows, and in most regions where dairying is carried on, proper housing of the herd is the important factor in preserving the health of the animals. Dis-

ease, especially tuberculosis, is frequently contracted because the stable is poorly ventilated and because it is kept in a filthy condition. The stable should be well ventilated and well-lighted. The walls should be kept free from dust and should be frequently whitewashed. Above all, the floors should be kept free from filth and plenty of fresh, clean litter should be spread daily. Open feed troughs and partitions made of piping or iron railing, which will not collect the dust, are the most desirable.

The yard and grounds about the barn should also be free from weeds, manure and rubbish.

Feed. Fresh grass is the most desirable feed for milch cows, but suitable pasture for a large herd requires so much land that some other source of food supply available all the year is necessary. During the months when pastures are not in grass, the cows must be fed entirely from this other source. The right sort of ration must be determined and the most economic means of supplying it be provided. Many farmers use ensilage, or silage, as it is commonly called.

Related Articles. Consult the following titles for additional information:

Agriculture	Creamery
Butter	Cream Separator
Cattle	Milk
Cheese	Milk, Condensed
Churn	Silo and Silage

DAISY, an attractive, much-loved flower which grows in meadows and fields in Europe and America. The typical daisy is pure white and single with a yellow or brown center, but double daisies have been produced in great variety of colors. The daisy blooms almost continuously and has already become partially naturalized in the New England states. In the United

States and Canada the oxeye daisy is a species of wild chrysanthemum, known commonly as the marguerite. In America the name *daisy* is loosely applied to other flowers, such as the black-eyed Susan and some species of wild asters. During the age of chivalry the daisy was the emblem of fidelity and love, but it now signifies simplicity.



Shasta Daisy. Accompanying the article on Luther Burbank there is an exact-size picture of the Shasta daisy, and by its side daisies of the size of its original parents. Burbank's achievement with this flower is as fascinating as a fairy story. From all over the world where daisies grew he secured seeds of the best varieties—not simply a few, but thousands. These were planted under best conditions and watched with closest care. They were all destroyed except the best specimens, but from their death there came a new daisy larger and more beautiful and of a harder variety, one that would flower in every climate. More than 10,000 seeds were required for this one experiment.

DALLAS, GEORGE MIFFLIN (1792-1864), an American Vice-President, born in Philadelphia. He was graduated at Princeton in 1810 and went to Russia as private secretary to Albert Gallatin, special envoy. In 1823 he was elected mayor of Philadelphia. This office he resigned to become United States district attorney. In 1831 he was sent to the United States Senate and later was minister to Russia. He was elected Vice-President with Polk in 1844 and was later sent by Pierce as minister to England.

DALLAS, *dal'as*, Tex., the second city of the state, though but little smaller than Houston, its nearest rival. It is the county seat of Dallas County and is situated 31 miles east of Fort Worth, on the Trinity River. It is one of the great railroad centers of the state, being served by the Burlington, the Chicago, Rock Island & Pacific, the Gulf, Colorado & Santa Fé, the Missouri-Kansas-Texas, the Saint Louis-San Francisco, the Saint Louis Southwestern, the Southern Pacific, the Texas & Pacific, and the Texas Electric railways. There are several interurban lines, 19 bus lines and two airports. Dallas is on the routes travelled by American Airways and United Air Lines.

The population in 1930 was 260,475, a gain of 63.8 per cent in 10 years.

Dallas has more than 700 factories. It is the world's largest manufacturer of cotton gin machinery; it also excels in saddlery, harness and leather goods. Other important industries and products are cement, petroleum products, automobile accessories, printing and publishing, bagging and tents, textiles, clothing and cottonseed products.

There are 152 schools in the city accommodating a school population of 60,000. Higher

and professional educational facilities include Southern Methodist University, Jefferson Law School, and Baylor University schools of medicine, dentistry and nursing. Special schools include academies for girls and for boys, and a military academy. Dallas has a Carnegie Library, more than 300 churches, 16 golf courses, 72 periodical publications, three radio-broadcasting stations, and 130 hotels valued at \$30,000,000. The 60 parks cover 4,400 acres. The state fair grounds cover 160 acres. There are 80 auditoriums in the city. Dallas has a large number of imposing public buildings, including a municipal building with over 30 acres of floor space, a large courthouse and two of the largest hotels in the South. Greater Dallas is made up of Dallas, Highland Park and University Park, adjacent but separate municipalities.

DALLIES, *dals*, the name given in America to various rocky gorges and the cataracts and rapids flowing in them. The word is the French for *trough* or *drain*, and was first used in its present sense by early French explorers. The dalles of the Columbia are about 200 miles from its mouth, where the river is compressed by lofty basaltic rocks into a roaring torrent. The rocks here present a scene of rare beauty. To overcome the obstacle to navigation at this point in the Columbia, a canal has been constructed around the dalles at a cost of \$5,500,000. The dalles of the Saint Louis are a series of cataracts near Duluth, Minn., and the dalles of the Wisconsin are at Kilbourn, Wis.

DALLIES, THE, or DALLIES CITY, ORE., the county seat of Wasco County, 88 miles east of Portland. It is situated on the south bend of the Columbia River. It is served by the Southern Pacific Railroad. This section of the river valley is noted for the grandeur of its scenery.

The principal industries are sheep and cattle raising, and grain and fruits are cultivated. The city contains flour and grist mills, salmon canneries and wool-scouring plants and has a large trade in live stock and wool. Population, 1930, 5,883.

DALMATIA, *dal ma' she ah*, a district in the kingdom of Jugo-slavia. It stretches along the coast of the Adriatic Sea from Istria to the city of Cattaro, and is bounded on the north by Croatia, on the east by Bosnia (including Herzegovina) and Montenegro. The Dinaric Alps form a natural

boundary between Dalmatia and Bosnia. Dalmatia has an area of about 5,000 square miles, including the numerous coast islands; it has an estimated population of 622,000.

The surface of Dalmatia is diversified by hills and mountains. Because of political unrest agriculture has long been in a backward state, but the fertile valleys produce fruits in abundance, including grapes, figs, olives and a cherry used in making the famous *maraschino* cordial. On the coast, fish, especially the tunny and the sardine, abound. The trade of the country is mostly confined to the coast towns, chief among which are Zara, the capital, Sebenico, Cattaro, Spalato and Ragusa. Cattaro is one of the best natural harbors in Europe.

Dalmatia was anciently the southern portion of the Roman Province of Illyricum. In the Middle Ages part of the region belonged to the Venetian Republic. After varying changes of ownership the whole country became in 1814 a part of the Austrian Empire.

After the dissolution of Austria-Hungary, at the close of the World War (1918), the right to possess Dalmatia was claimed both by Italy and by the new Jugo-Slavic state. The former based its claim on historical and cultural grounds, and on a secret treaty signed in 1915 by England, Russia, France and Italy, whereby the latter was to come into possession of the eastern shore of the Adriatic after the war. The Jugo-Slavs, on the other hand, claimed Dalmatia by virtue of self-determination of peoples, as Slavs predominate in the Dalmatian population. The question was decided by Dalmatia joining the Serb, Croat, and Slovene State, which became Jugo-Slavia. See JUGO-SLAVIA.

DALMORES, dal' mo res, CHARLES (1872-), a French tenor who became an established favorite with American audiences. After completing his musical education at the Paris Conservatoire, he began a public career in Rouen, in 1899, and thereafter was very successful in Belgium, England and Bavaria. Dalmores made his American débüt in 1906 as a tenor singer of the Manhattan Opera Company, and later joined the Philadelphia-Chicago organization. His most successful rôles include the tenor parts in *Carmen*, *Samson and Delilah*, *Romeo and Juliet* and *Tales of Hoffman*.

DAM, a bank, or construction of stone, earth or wood across a stream for the pur-

pose of keeping back the current to give it increased head, for holding back supplies of water, for flooding lands or for rendering the stream above the dam navigable by increased depth. Its material and construction will depend on its situation and the amount of pressure it has to bear. For streams which are broad and deep strong materials are required, usually stone masonry bound in hydraulic cement and a strong framework of timber. The common forms of a dam are either a straight line crossing the stream transversely, one or two straight lines traversing it diagonally, or an arc with its convex side toward the current. See *IRRIGATION*.

DAMAGES, in law, a money compensation paid to a person for loss or injury sustained by him through the fault of another. It is not necessary that the act should have been a fraudulent one, it is enough that it be illegal, unwarrantable or malicious. It is becoming the common practice in both England and America to allow the damages to cover only the loss sustained, estimated at its real value, together with the expenses incurred in pressing the suit. Formerly it was the usual principle to award damages not only for actual loss, but for "retribution" or "satisfaction," as well.

DAMASCUS, *dam'as'kus*, SYRIA, the largest city and since 1930 the capital of the republic of Syria, under a constitution adopted in that year. Damascus has the great distinction of being the oldest city in the world that has had a continuous existence. Mention is made of it in the Book of Genesis.

Damascus is beautifully situated on a plain which is covered with gardens and orchards and watered by the Barrada. The streets are narrow, crooked and in parts dilapidated, and, except in the wealthy Moslem quarter, the houses are low, with flat-arched doors. Within, however, there is often a singular contrast, the furniture and decorations being elegant and costly. The chief buildings are the great Mosque and the Citadel. Among the places of historical and traditional interest are the leper hospital in the house of Naaman, the house of Ananias and the place of Saint Paul's conversion. The bazaars are a notable feature of Damascus. In the midst of the bazaars stands the Great Khan, this and thirty inferior khans being used as exchanges, or market places, by the merchants.

Damascus is an important center of trade in European manufactures, it is also a place of considerable manufacturing importance, the principal products being silk, damasks, cotton and other fabrics, tobacco, glass, soap, fine cabinet work and elegant jewelry; but the manufacture of the famous sword blades (see *DAMASCUS STEEL*) no longer exists. Damascus is one of the holy Moslem cities and it remains typically Oriental. During the many centuries of its history it had been ruled by Israelites, Persians, Greeks, and Romans before it fell to the Turks in 1516, to remain under that yoke until 1918. Population, 194,000.

DAMASCUS STEEL, a kind of steel originally made in Damascus and the East, greatly valued in the making of swords because of its hardness of edge and flexibility. It was made of pure iron and steel of peculiar quality, containing a larger proportion of carbon than ordinary steel. The steel was produced by careful heating, laborious forging, doubling and twisting. See *STEEL*.

DAMASK, a costly fabric of silk, linen or wool, made by weaving the weft into the warp in such a way as to make figures representing fruit, flowers, leaves and other forms. It gets its name from Damascus, the city where it was first manufactured. Linen damasks are used chiefly for tablecloths and napkins. Damasks of silk and of wool make handsome furniture coverings.

DAMASKINING, the ornamenting of iron and steel with designs produced by inlaying or incrusting with another metal, such as gold or silver. The pattern is etched on the steel, and the other metal is filled into the etched lines.

DAMOCLES, *dam'o kleez*, a courtier of Dionysius, tyrant of Syracuse. Damocles declared one day that he considered the lot o' Dionysius the happiest on earth, and Dionysius offered to give him a taste of the glory which he so much envied. While seated at a table surrounded by all the royal appointments, Damocles on looking up was horrified to perceive a sword suspended over his head by a single hair. Dionysius had thus made plain to him the uncertain nature of royal happiness. In current speech the expression, "sword of Damocles," signifies an expected disaster which may come at any time.

DAMON AND PYTHIAS, *pyth'ias*, two youths who lived in ancient times in Syracuse, celebrated as models of constant friend-

ship. Pythias had been unjustly condemned to death by Dionysius the younger, tyrant of Syracuse; and as he was obliged to leave Syracuse to arrange his affairs, his friend Damon was taken as a pledge that Pythias should return on the day fixed. Pythias, being unexpectedly detained, had great difficulty in reaching Syracuse in time to save Damon from being executed in his place, and Damon made no attempt to escape from his promise. Dionysius was so affected by the proof of their friendship that he pardoned Pythias. The Knights of Pythias, a fraternal order established in the United States, has this incident for its basis (see PYTHIAS, KNIGHTS OF).

DAMROSCH, *daim'rosh*, LEOPOLD (1832-1885), a German-American musician, the first to establish choral societies in New York. He was graduated in medicine at the University of Berlin and began practice at Posen, but soon abandoned his profession for the study of music and became a concert violinist in 1855. Damrosch later became director of orchestras in Posen and Breslau, and in 1871 went to New York, where he was director of the Arion Society. In 1884 he accomplished his most notable achievement in introducing and maintaining German opera in New York City. He was the composer of numerous cantatas, concertos and songs, and was a frequent contributor to musical magazines.

DAMROSCH, WALTER JOHANNES (1862-), an American musician and orchestra conductor, the son of Leopold Damrosch (which see). His first important position was conductor of the oratorio and symphony societies in New York and assistant conductor of the German opera at the Metropolitan Opera House. In 1900 he conducted German opera in New York and in the following year became conductor of the New York Philharmonic Orchestra. He resigned this post in 1928, then became musical counsel for the National Broadcasting Company.

DAN, a word meaning *judgment*, refers to two ancient characters. 1. One of the sons of Jacob by Bilhah. At the time of the exodus the Danites numbered 62,700 adult males, being then the second tribe in point of numbers. Samson was a member of this tribe. 2. A town in the extreme north of Palestine. This, with Beersheba in the south, gives rise to the expression "from Dan to Beersheba," meaning the land from north to

south, or the entire distance between two places.

DANA, CHARLES ANDERSON (1819-1897), one of America's greatest editors, was born at Hinsdale, N. H. He studied at Harvard, but was obliged to leave after two years, because of ill health. He was a member of the Brook Farm Association and one of the editors of a paper established in its interest. After working for other papers he joined the New York *Tribune* in 1847, on the staff of which he remained for fifteen years. During the latter part of the Civil War he was assistant Secretary of War, and after the close of the war he started a Chicago paper, which, however, was not successful. From 1888 he was editor and part owner of the New York *Sun*, and perhaps more than any other journalist his personality was identified with his newspaper.

DANA, JAMES DWIGHT (1813-1895), an American geologist, born in Utica, N. Y. In 1850 he became professor of natural history at Yale College. He wrote *System of Mineralogy*, *Manual of Mineralogy*, *Coral Reefs and Islands*, *Manual of Geology* and *Text Book of Geology*. Dana did much to place American geology on a scientific basis and also to popularize the subject. He was recognized as the foremost American geologist.

DANA, RICHARD HENRY, JR. (1815-1882), an American lawyer and author, son of Richard Henry Dana, the poet. After being obliged to give up his work at Harvard College, he took a sea voyage around Cape Horn to California and published, as a result of his experiences during the voyage, *Two Years Before the Mast*, one of the best sea stories ever written. He became a lawyer and held various important official positions and was expert in international law.

DANBURY, CONN., one of the county seats of Fairfield County, the other being Bridgeport. It is sixty miles northeast of New York City, on the New York, New Haven & Hartford Railroad, and is famous as being the leading American city in the manufacture of hats. Over thirty factories are given to the manufacture of hats and their accessories. The town also manufactures underwear, silk and silver-plated ware. It has a state normal school, is the seat of the county agricultural society, and has a public library and two parks. Population, 1920, 18,889; in 1930, 22,261.



DANCING, *dan'sing*, a form of exercise, accompanied almost always by music, in which the participants perform graceful movements in measured time. In its earliest forms among primitive races, dancing was a mode of expressing strong emotions of joy and sorrow, love and rage, and even of the most solemn and impassioned religious feelings; in more civilized forms of human society it becomes a pleasurable form of recreation or an agreeable spectacle at public entertainments.

Dancing corresponds to a universal primitive instinct in man. It is still practiced by the South Sea Islanders, the forest Indians of Brazil, the Zulus, the negroes of Central Africa and the native Australians, exactly as it was in the earlier stages of every civilized modern race. Ferocious war dances were practiced by savage warriors, as, for example, the North American Indian braves, who worked themselves up into frantic mechanical intoxication, capable of carrying them irresistibly on to victory. The Zulu war dance is still a noble exercise for warriors, like the Pyrrhic dance of the ancient Spartans; and the dancing and whirling dervishes in the East, who work themselves into spasms of physical excitement, are still respected for their devoutness and piety.

Among the ancient historic peoples dancing was generally an expression of religious, patriotic or military feeling, as in the case of the dance of David before the ark, or the Pyrrhic dance of the Greeks. The Romans, however, like the Orientals, hired slaves to do the dancing. France took the lead in inventing modern dances. Among some of these dances were the graceful *minuet*, the favorite for a century, the *quadrille*, the *galop*, introduced from Germany, the *cotillion*, fashionable under Charles X; the *polka*, first danced at Odeon in 1840 by a dancing master from Prague; the *schottisch*, also of Bohemian origin, first brought out in Paris in 1844; the *lancers*, introduced by Laborde in 1836, and the *waltz*, introduced into European ballrooms in 1795. This graceful

dance will probably never lose its popularity. Another favorite is the *two-step*, a livelier dance than the *waltz* and one adapted to march time. It is of American origin.

Characteristic of particular races or merely of classes of people are such forms of the dance as the *Scotch reel*, *Highland fling* and *strathspey*, the *Irish jig*; the *negro breakdowns*; sailors' *hornpipes*, and the like.

So-Called "New" Dances. Early in the present century a dance craze swept over America and Europe, following the introduction into San Francisco of the *turkey trot*. For a time people were dancing this and others like it—the *bunny hug*, *grizzly bear*, *Texas Tommy*, etc.—but the vulgarity of these dances caused a reaction against them, and others more refined in character became popular. The latter included the *tango*, *one-step* and *fox trot*, based on walking steps, and the *hesitation* and *waltz* canter, based on the *waltz*.

Other variations of the dance have had their period of popular favor, the general tendency being against those forms which are deemed vulgar or which require unusual physical exertion.

DANDELION, a plant which carpets lawns and meadows with bright yellow in the spring, summer and fall. The leaves are toothed, radiating from the crown of the very long root, and the name is from the French for *tooth of a lion*. The dandelion blooms profusely, bearing many slender stalks, each surmounted by one large, bright yellow head of many small flowers which mature into a beautiful white ball of feathered fruits. These are transported far and wide by the wind. The whole plant is full of a milky and bitter juice. Some species have powerful medicinal properties, and the young leaves of all are often used for greens and salads.



DANDELION

DANDRUFF, the visible effect of a disease of the scalp. It appears as a white, scaly substance which loosens from the

scalp in small particles and either adheres to the hair or falls on the clothing. The presence of dandruff gives rather positive assurance that in time the disease will cause the hair gradually to fall out. The best remedy is a vigorous daily scalp massage and an occasional shampoo, in which pure soap is used.

DANIEL, the prophet, a contemporary of Ezekiel, was born of a distinguished Hebrew family. His story is related in these volumes in the article **BIBLE**, subhead *Bible Stories*.

DANIELL CELL, an electric cell especially designed to give a small but continuous current. The modern Daniell cell consists of a glass jar in which is placed a porous cup containing a zinc rod or plate. Outside the cup is a copper cylinder with openings to allow the liquid to circulate freely. The porous cup is almost filled with dilute sulphuric acid and a saturated solution of copper sulphate is placed in the jar (outside the porous cup). A small vessel of solid copper sulphate is also placed in the jar to maintain the concentration of the solution. Some of the zinc goes into solution in the sulphuric acid causing the zinc electrode to become negatively charged. When the copper electrode is connected to the zinc this charge causes a current to flow from the copper to the zinc. At the same time copper from the copper sulphate solution is deposited on the copper electrode. Since copper is a good conductor it does not interfere with the current, as does the hydrogen which is deposited in a simple cell, and the flow of current continues undiminished for several weeks. During this time the chemical action of the cell gradually uses up the zinc and copper sulphate in generating the current. Daniell cells in various forms are widely used for producing current for telegraph stations and other devices which require a continuous current.

DANISH WEST INDIES, the name formerly applied to the Virgin Islands of the United States (which see).

DANTE ALIGHIERI, *dahn'ta ah le gyd're*, (1265-1321), Italy's most famous poet, and one of the greatest who ever lived. He was born in Florence of a family which probably belonged to the lower nobility.

Of his youth and education nothing definite is known, although it may be that he studied with the learned Brunetto Latini. He was but a boy of nine years when he first

saw Beatrice Portinari, and the love she awakened in him he has described in that record of his early years, the *New Life*, as well as in his later great work, the *Divine Comedy*. In 1291, the year after the death of Beatrice, Dante married Gemma Donati, by whom he had several children. Soon after this time the Guelphs in Florence became divided into the rival factions of **Bianchi** and **Neri** (Whites and Blacks), the latter an extreme Papal party, the former a moderate party which wished for reconciliation with the Ghibellines. Dante's

sympathies were with the Bianchi, and when, in 1302, the opposite party gained control, Dante was banished with many of his fellows. The poet remained an exile to the end of his life; and his history during this time is semi-mythical. He is said to have visited many cities, Arezzo, Bologna, Sienna and even Paris, and in 1320 he certainly stayed at Ravenna, with his friend Guido da Polenta. He was buried at Ravenna, where his bones still lie.

Dante's great poem, the *Divine Comedy*, written in great part, if not altogether, during his exile, is divided into three parts, entitled *Hell*, *Purgatory* and *Paradise*. The title *Comedy* was given to it, in accordance with the standards of the time, because it begins with horrible scenes and ends cheerfully. The epithet *Divine* was added by others because of its lofty character.

The "Divine Comedy." The poet dreams that he has wandered into a dusky forest, when the shade of Vergil appears and offers to conduct him through hell and purgatory. Further the pagan poet may not go, but Beatrice herself will lead him through paradise. Dante with marvelous imaginative power gives brief life histories of the famous guilty ones—Pope and Ghibelline, Italian lord and lady—often in his severe style compressing the story into two or three lines, but always picturing guilt and punishment with passionate force, subtle insight and intense religious faith. From hell, the poet, still in the company of Vergil, ascends to purgatory, where the scenes are



DANTE ALIGHIERI

similar, though the punishments are only temporary. In the earthly paradise above purgatory, Dante beholds Beatrice in a scene of surpassing magnificence, ascends with her into the celestial paradise, and after roaming over seven spheres he reaches the eighth, where he beholds "the glorious company, which surrounds the triumphant Redeemer." In the ninth Dante feels himself in the presence of the Divine essence, and sees the souls of the blessed on thrones in a circle of infinite magnitude. The Deity himself, in the tenth, he cannot see for excess of light. Dante's great poem ranks with the world's greatest epics, and has been translated into many languages.

DANTON, *dahN tohN'*, GEORGES JACQUES (1759-1794), one of the leaders in the French Revolution. He was foremost in organizing and conducting the attack on the Tuilleries, August 10, 1792, voted for the capital punishment of all returning aristocrats and for the death of the king, and with Robespierre brought Hébert and his followers to the scaffold. Robespierre succeeded in having Danton denounced and thrown into prison because he had dared to counsel moderation, and he was afterward condemned by the revolutionary tribunal as an accomplice in a conspiracy for the restoration of monarchy, and was executed.

DANTZIC. See DANZIG.

DANUBE, the chief commercial river in Europe, second only to the Volga in length and extent of drainage basin. It originates in two small streams, rising in the Black Forest, in Baden, and uniting at Donaueschingen. The direct distance from source to mouth of the Danube is about 1,000 miles, and its total length, including windings, about 1,750 miles. From its source the Danube flows in a northeasterly direction to Ulm, in Württemberg, where it becomes navigable for vessels of 100 tons; then to Ratisbon, in Bavaria, where it becomes navigable for steamers. Here it turns in a southeasterly direction, entering Austria at Passau. It passes Vienna, then Budapest, above which it suddenly turns due south, holding this direction until joined by the Drave, after which it runs southeast, entering Yugoslavia and passing Belgrade. Continuing its course eastward, it forms for a long distance the boundary line between Rumania and Bulgaria. At Silistra it once more turns northward, then eastward, and flowing

through Rumania, it falls into the Black Sea by three different outlets.

The Danube is noted for beautiful scenery along its banks, which in places rivals that of the Rhine. Its value as a commercial route has been enhanced by extensive construction work. The celebrated Iron Gate (which see), through which the river flows across the South Carpathians, has been rendered navigable, and shipping passing through it is regulated by an international commission. There is canal communication with the Rhine, and the Sulina channel mouth has been deepened to accommodate the largest ocean craft.

DANVILLE, Ill., founded in 1827, is the county seat of Vermilion County, and the center of a rich coal-mining district. It is 123 miles south of Chicago, on the Vermilion River, and on the Wabash, the Chicago & Eastern Illinois, New York Central, and Big Four railroads. There is an airport. Its industries center largely around the coal fields, but the city has one of the largest brick plants in the world, and there are important zinc works. The city has an imposing Federal building, and a fine county building, also a Y M C A and an Elks' Home, a Carnegie Library and two hospitals. The commission plan of government prevails. Population, 1930, 36,765.

DANVILLE, Va., a city of Pittsylvania County, 140 miles southwest of Richmond, on the Dan River and on the Southern and Danville Western railroads. The city has a beautiful location, is in a region producing a very fine quality of tobacco, is the second largest leaf tobacco market in America and contains about forty tobacco factories. The river furnishes good water power, and there are large cotton works, flour and grist mills, knitting mills, overall factories, a cheroo factory and other enterprises. It is the seat of Roanoke Institute, Randolph-Macon Institute and Danville School for Boys. The place was settled in 1792. It was for a short time the seat of the government of the Southern Confederacy in 1865. Population, 1920, 21,539; in 1930, 22,247, a gain of 9 per cent.

DANZIG, or DANTZIC, *dahn'tsik*, a free city, internationalized in 1919, by order of the peace conference. It was formerly the capital of the province of West Prussia, 255 miles northeast of Berlin, on the Vistula, about three miles from the Baltic Sea.

Among the principal buildings are the Dom or Cathedral, begun in 1343; the Church of Saint Catharine; the fine old Rathaus; the exchange; the arsenal; an observatory; three monasteries; two synagogues and two theaters. The prosperity of the town is founded chiefly on its transit trade. The principal trade is in grain, timber and sugar. There were formerly German government establishments for the manufacture of arms and ammunition.

Poland sought more direct port control than was possible at the Free City of Danzig, so it established a new port entirely in Polish territory a few miles west, at Gdynia. Later,

the country presents beautiful scenery, rising gradually upward from the sea to the range of Mount Ida; the European side is steep and rugged, but is densely peopled and highly cultivated. On both shores are numerous forts and powerful batteries. Two castles on the opposite shores are near the sites of ancient Sestos and Abydos, and recall the story of Hero and Leander (see HERO).

By a treaty made in 1841 between the five great powers and Turkey, confirmed by the Peace of Paris in 1856, it was decreed that no foreign man-of-war should pass the strait without the express permission of the Tur-



THE REGION OF THE DARDANELLES

political conditions between the Free City and Poland were on a more friendly basis, for Poles comprise a large element of the people. Population of the city of Danzig, 262,600; of the entire Danzig Corridor, 407,500, in 1933.

DAPHNE, *daf'ne*, in classic mythology, daughter of the river god Peneus. Apollo wooed her in vain, and one day, while he was pursuing her through the woods, she called on her father to change her form, as she found herself exhausted. Peneus then changed her into a laurel tree, which was thereafter sacred to Apollo (see LAUREL). There is a famous statue representing this myth in the Villa Borghese, Rome, the work of Bernini.

DARDANELLES, *dahr da nel's*, the ancient HELLESPONT, is a narrow channel which connects the Sea of Marmara with the Aegean Sea and is a short part of the boundary separating Europe from Asia. It is about forty-seven miles in length and varies in breadth from one to four miles. A rapid current, often much increased by winds, runs southward. On the Asiatic side

kish government. During the World War the allies made desperate attempts to force a passage through the Dardanelles to Constantinople. In February and March, 1915, an allied fleet bombarded the forts at the entrance, and in April an army was landed on the Gallipoli Peninsula, but with heavy losses. The heroism of the soldiers and the sacrifice of thousands of lives were not enough to overcome the Turks, and after eight terrible months the allied forces withdrew from the peninsula. On the surrender of Turkey, in 1918, the Allies occupied the strait temporarily, and in 1920 it was internationalized—opened freely to all nations. In 1936, however, the Turks demanded control again, much to the disquietude of the great powers.

DARIEN, *da'ri'en*, GULF OF, a gulf of the Caribbean Sea, at the north extremity of South America, between the Isthmus of Panama and the mainland. The chief river flowing into it is the Atrato. Columbus reached the gulf on his fourth voyage in 1502. The Isthmus of Panama was formerly called Isthmus of Darien.

DARIEN SCHEME, a celebrated financial project set afloat by a Scotchman, William Patterson, whose purpose was to form a settlement on each side of the Isthmus of Darien (now Isthmus of Panama), in order to control the trade between the eastern and western hemispheres. Nearly \$4,000,000 was subscribed, fully half of it in Scotland, and in 1698 1,200 Scotch colonists sailed for the isthmus. Disease and famine, however, caused them to desert their settlement and return to Scotland in June, 1699. Two other companies of about the same size also attempted to establish settlements at Darien, with equally unfortunate results.

DARIUS I (550-485 B. C.), a Persian king who attained the throne in 521 B. C. One of his first acts was to divide his empire into twenty satrapies, or provinces, with a governor over each. He reduced the revolted city of Babylon, and led an expedition of 700,000 men against the Scythians on the Danube. The Greeks had aided the Ionians in their struggle to free themselves from Persia, and Darius therefore sent an army under Mardonius to invade Greece. But the ships of Mardonius were destroyed by a storm in doubling Mount Athos, and his army was cut to pieces by the Thracians. Darius, however, fitted out a second expedition, which was met on the plains of Marathon by an Athenian army under Miltiades and completely defeated (490 B. C.). Darius had determined on a third expedition, when he died in 485. See MARATHON.

DARIUS III, the twelfth and last king of Persia. He ascended the throne in 336 B. C., when the kingdom had been weakened by luxury and the tyranny of his governors and could not resist the attacks of Alexander of Macedon; the army of Darius was totally routed on the banks of the Granicus, in Asia Minor. Darius then hastened to meet Alexander in the mountainous region of Cilicia and was a second time totally defeated near the Issus. Two years afterward, all proposals for peace having been rejected by Alexander, Darius collected another army, met the Macedonian forces between Arbela and Gaugamela, and was again routed. Alexander captured Susa, the capital, and Persepolis, and reduced all Persia. Meanwhile, Darius was collecting another army at Ecbatana in Media, when a traitorous conspiracy was formed against him, by which he lost his life, in 330 B. C.

DARK AGES, a term used to designate the period from about the fall of the Roman Empire, in 476, to the revival of learning, in the twelfth century. Sometimes the words are understood to mean the entire Middle Ages, but usually only the earlier part of that period is so designated. See MIDDLE AGES.

DARLING, GRACE HORSLEY (1815-1842), a celebrated English heroine. In 1838 the steamer *Forfarshire*, with forty-one passengers on board, besides her crew, became disabled off the Farne Islands during a storm and was thrown on a rock, where it broke in two, part of the crew and passengers being left clinging to the wreck. The next morning William Darling observed them from Longstone lighthouse, about a mile distant, but he shrank from attempting to reach the wreck in an open boat in such a raging sea. His daughter Grace, however, implored him to make the attempt and let her accompany him. At last he consented, and father and daughter reached the wreck and succeeded in rescuing nine sufferers. The news of the heroic deed soon spread, and the brave girl received testimonials from all quarters. A purse of \$3,500 was publicly subscribed and presented to her. Four years later she died of consumption, honored throughout the world.

DARMSTADT, *dahr'm'staht*, GERMANY, capital of the former grand duchy of Hesse, is situated fifteen miles south of Frankfort-on-the-Main. Among the remarkable buildings are the old grand-ducal palace, containing one of the largest libraries in Germany, the Catholic church, and the Rathaus, or townhall, built in 1580. Darmstadt is a busy manufacturing town. There are iron foundries, breweries, machine shops, tobacco factories, carpet works, and manufactures of scientific instruments, chemicals and playing cards. The town is also an important railway center. In 1330 it secured municipal rights, and in 1567 it became the capital of Hesse. It was burned by the French in the seventeenth century, but afterwards rapidly rose in importance. Population, 1933, 93,000.

DARNEL, the popular name of a species of poisonous grass. It appears to be the tares of Scripture. It is said to have narcotic and stupefying effects, but recent researches have cast some doubt on its reported injurious qualities. It is met with in corn

fields, and is now naturalized in North America.

DARNING NEEDLE. See DRAGON FLY.

DARNLEY, HENRY STUART, Lord (1545-1567), the second husband of Mary Queen of Scots. He was a son of the Earl of Lennox and Lady Margaret Douglas, a niece of Henry VIII. In 1565 he was married to Mary Queen of Scots. It was an unfortunate match; Mary was disgusted at his coarseness and could not long conceal her contempt. His part in the murder of Rizzio angered Mary still further, and when, on February 9, 1567, the house in which he lay recovering from an illness was blown up by gunpowder, Mary was suspected of complicity in the crime. See MARY STUART.

DARTER, or SNAKE BIRD, the latter name applied because of the length of the neck, is a web-footed bird related to the cormorant and found near the eastern coasts of tropical America and the western coast of tropical Africa, as well as in Australia. It is the habit of these birds to perch on



DARTER

trees by the water side and, after hovering an instant over the water, suddenly to dart at their prey with unerring aim. Their nests are rudely constructed in trees, and the eggs are bluish in color.

DARTMOUTH, dahrt'muth, NOVA SCOTIA, on Halifax Harbor opposite Halifax, and on the Intercolonial Railway. The industries include cordage works, a sugar refinery, rolling mills, a chocolate factory, ship repairing and boiler works, and extensive ship yards. The Imperial Oil Company has a large plant here. The town has six churches and several banks. Population, 1921, 7,899; in 1931, 9,100.

DARTMOUTH COLLEGE, one of the earliest and best known of American colleges,

situated at Hanover, N. H. The college is the outgrowth of an Indian school which was opened in 1754 and was founded by Rev. Eleazar Wheelock. The institution was named from the Earl of Dartmouth, who was one of the principal contributors and the first president of the board of trustees. The college began its existence in the midst of the wilderness, and the only buildings for several years were log huts, but it continued to increase in numbers and influence until it became one of the leading colleges of the country. Later, a religious controversy caused the state legislature to create a new corporation, which, without consent of the old board of trustees, assumed control of the college. This led to what is known as the Dartmouth College Case (see below). The college still remains an institution for men only. It confers degrees in arts and letters, science, the Amos Tuck School of Administration and Finance, and civil engineering. The student body numbers about 2,500, the faculty about 250. The library contains more than 400,000 volumes.

Dartmouth College Case. Dartmouth College was founded by a charter granted by George III in 1769. When the independence of the United States was established, the state of New Hampshire assumed the position occupied by the throne under the colonial government. In 1816 the legislature created a new corporation for the college, making certain changes in its management. The college appealed to the courts, but lost its suit, and then appealed to the United States Supreme Court where its case was argued by Daniel Webster. The Supreme Court, in a decision handed down by Chief Justice Marshall in 1819, declared that the legislature did not have authority to legislate the old charter out of existence, or to pass laws violating its provisions, by reason of the clause in the United States Constitution which establishes the inviolability of contracts.

DARWIN, CHARLES ROBERT (1809-1882), one of the world's greatest naturalists, the leading scientist of the nineteenth century, was born in Shrewsbury, England. He early devoted himself to the study of natural history, and in 1831 was appointed naturalist to the surveying voyage of H. M. S. *Beagle*. Darwin came home with rich stores of knowledge, part of which he soon gave to the public in various works. In 1859 his name

attained its great celebrity by the publication of *The Origin of Species by Means of Natural Selection*. This work, scouted and derided though it was at first in certain quarters, may be said to have worked nothing less than a revolution in biological science. In it for the first time was given a full exposition of the theory of evolution as applied to plants and animals, the origin of species being explained on the hypothesis of natural selection. This theory is now generally accepted by the prominent scientists, though modified and improved in many of its details. The rest of his works are largely based on the material he had accumulated for the elaboration of this great theory. The principal ones are a treatise on the *Fertilization of Orchids; Domesticated Animals and Cultivated Plants; Descent of Man and Variation in Relation to Sex; The Expression of the Emotions in Man and Animals; Movements and Habits of Climbing Plants; Insectivorous Plants; Cross and Self Fertilization; The Power of Movement in Plants, and The Formation of Vegetable Mold*. See **EVOLUTION**.

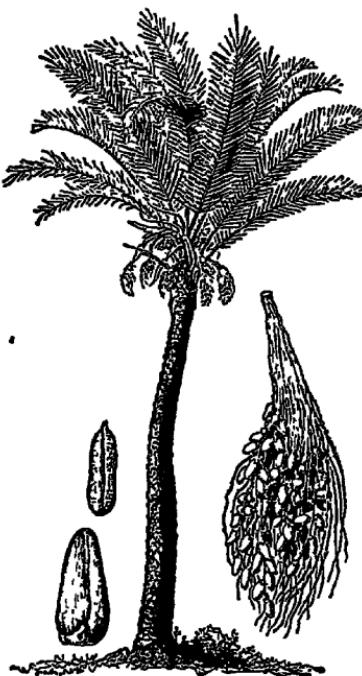
DASKAM, JOSEPHINE DODGE See **BACON, JOSEPHINE DASKAM**

DATE, the fruit of the date palm, or the tree itself. The fruit is used extensively as an article of food by the natives of Northern Africa and of some countries of Asia. It consists of a fleshy coat, separable into three portions, and covering a hard, horny seed. Next to the coconut palm, the date is unquestionably the most interesting and useful of the palms. Its stem shoots up to the height of fifty or sixty feet, without branch or division, and is of nearly the same thickness throughout its length. From the summit it throws out a magnificent crown of large, feather-shaped leaves, besides a number of stalks, each of which in the female plant bears a bunch of from 180 to 200 dates, each bunch weighing from twenty to twenty-five pounds. The fruit is eaten fresh or dried. Cakes of dates pounded and kneaded together are the food of the

Arabs who traverse the deserts. A liquor resembling wine is made from dates by fer-



CHARLES DARWIN



DATE PALM

mentation. Dates are now being cultivated in California, Arizona and other warm-weather states with considerable success, a large industry is developing.

DAUDET, *do də'*, ALPHONSE (1840-1897), a French novelist, born at Nîmes. He went to Paris in 1857 to seek his fortune but his collections of poems failed to win any attention, and his plays met with little better reception. When he discovered his powers as a story-teller, however, his success was assured. The volumes of short stories, *Letters from My Mill* and *Monday Tales*, established his reputation, which was rendered more secure by each novel which he published. *Numa Roumestan* and *The Nabob* are probably his greatest works, although many readers find *Tartarin of Tarascon* the most attractive. Daudet himself regarded *Sapho* as the best of his writings, and it has become widely known through dramatization.

DAUGHTERS OF THE AMERICAN REVOLUTION, a patriotic national society, organized in Washington, D. C., in 1890. Only those women whose ancestors fought upon the American side in the Revolutionary War are admitted to membership. Its purpose is the fostering of reverence for the achievements of the Revolutionary heroes and the collection of relics and the erection of monuments. There are chapters in almost all the states and in Canada, Hawaii and Alaska. Its membership of 171,000 is divided among 1,500 local chapters. The society owns a beautiful memorial hall in Washington, completed in 1910.

DAUGHTERS OF THE CONFEDERACY, UNITED. See CONFEDERACY, UNITED DAUGHTERS OF THE.

DAUPHIN, *daw'fin*, the title given to the eldest sons of the former kings of France. The name was assumed toward the middle of the ninth century by the lord of Dauphiny, which province was bequeathed by Humbert II to the King of France in 1349, on condition that the heir of the throne should bear the title of Dauphin of Vienne and should govern the province.

DAVENPORT, FANNY LILY GIPSY (1850-1898), an American actress, born in London, but educated in Boston. She was only seven years old when she first appeared on the stage and was but twelve when she made her formal débüt in *Faint Heart Never Won Fair Lady*. After playing for a short time in Mrs. Drew's theater in Philadelphia, she became connected with Augustin Daly's company in New York. Among her most famous portrayals were the leading rôles in *Fedora*, *Cleopatra* and *La Tosca*.

DAVENPORT, Iowa, the county seat of Scott County, on the Mississippi River, 330 miles above Saint Louis, 183 miles west of Chicago, and opposite Rock Island, Ill. It is on the Chicago, Rock Island & Pacific, the Chicago, Milwaukee, Saint Paul, & Pacific, the Chicago, Burlington & Quincy and other railroads of local importance.

The city is built upon the sides of a bluff and has a beautiful location overlooking a wide extent of country. It is connected with Rock Island by a railroad bridge and a combined wagon and railroad bridge. The important buildings include four hospitals, a Carnegie Library, a commercial club building, the fine Blackhawk Hotel and a number of fine office buildings. Among the educa-

tional institutions are the Academy of the Immaculate Conception, Saint Ambrose College, Saint Katherine's Hall and Palmer's Chiropractic College. The leading church edifices are the Protestant Episcopal and Roman Catholic cathedrals, Saint John's Methodist Church and the Kirkwood Presbyterian Church. The Iowa Soldiers' Orphans' Home is also located here. The city has a large trade in farm produce and is the seat of a number of extensive industries, including meat packing, manufactories of flour, lumber, residences ready-cut, farming implements and machinery, locomotives, pumps, steel cars and soap. In the river opposite the city is a government arsenal. Davenport was founded in 1833, and was named for Colonel George Davenport, leader of the company forming the first settlement. It was incorporated as a town in 1838 and as a city in 1851. Population, 1930, 60,751.

DA'VID, king of Israel, the youngest son of Jesse, a citizen of Bethlehem, and descended through Boaz from the ancient princes of Judah (*I* and *II Sam*; *I Chron*). He reigned from 1055 B. C. to 1015 B. C., according to the usual chronology, but recent investigations put the dates from thirty to fifty years later. Under David the empire of the Israelites rose to the height of its power, and his reign has always been looked on by the Jews as the golden age of their nation's history. Much of David's history is told in detail in the subhead *Bible Stories*, under the heading *BIBLE*.

DAVIES, LOUIS HENRY, Sir (1845-1924), a Canadian statesman and jurist, born at Charlottetown, Prince Edward Island. He was educated at the Prince of Wales College in that city and in London, England. Davies began the practice of law in his native city in 1866 and became one of the leaders of his profession. In 1869 and 1871-72 he was solicitor-general of the province; 1873-76, leader of the opposition; 1876-78 premier and attorney-general. He was elected to the Dominion House of Commons as a Liberal in 1882 and continuously returned until 1901, when he was appointed judge of the Supreme Court of Canada. He was counsel for Great Britain before the International Fisheries Arbitration Commission at Halifax in 1877, joint delegate with Sir Wilfrid Laurier to Washington for the settlement of the Bering Sea controversy in 1897, and a member of the Joint High Commission for the settlement of

all disputes between Canada and the United States. From 1896 to 1901 he was Minister of Marine. He became Chief Justice in 1918.

DAVIS, DAVID (1815-1886), one of America's greatest jurists of the Civil War period, was born in Cecil County, Md. He was graduated from Kenyon College, Ohio, studied law in Massachusetts and Connecticut, and removed to Illinois in 1835. In 1844 he was a member of the state legislature, and in 1848 was made United States circuit judge. In October, 1862, President Lincoln appointed him Associate Justice of the Supreme Court. Judge Davis was nominated by the labor reformers for President in 1872, but he usually affiliated with the Democratic party. In March, 1877, he resigned to enter the United States Senate, where he remained until 1883.



DAVIS, JEFFERSON (1808-1889), an American statesman, president of the Confederate States of America, whose memory is cherished in the South with unceasing devotion. Like Lee, he typified in a very definite way the ideals which inspired those who fought for the Confederacy. Jefferson

Davis was born on June 3, 1808, in Christian (later Todd) County, Kentucky. At an early age he went with his parents to Mississippi, where he received his preliminary education. He later entered West Point Military Academy, graduating in 1828, and for seven years he saw important service on the frontier. After engaging for several years in cotton planting, he was elected to Congress in 1845, when he became an ardent follower of Calhoun.

At the commencement of the Mexican War Davis left Congress and entered the contest as colonel of a regiment, and performed distinguished service. He entered the Senate in 1847, and became the leader of the Southern Party in the slavery and States' rights controversy, frequently coming into opposition with Stephen A. Douglas. Davis was Secretary of War during Pierce's administration, and while holding this position introduced several marked improvements in military tactics, coast defense, armament and

transportation. Upon the secession of Mississippi, he retired from the Senate, delivering a notable farewell address, and in the same year was elected president of the Confederate States.

During the war he acted with good judgment, dignity and devotion to principle and was especially anxious to mitigate the suffering and sorrow caused by the war. He was taken prisoner soon after the fall of Richmond and was confined in Fortress Monroe for two years. Released on bail in 1867, through the efforts of Horace Greeley and other Northerners, he was given full liberty by the general amnesty of 1868. During his last years Davis resided in Memphis and Mississippi, dying in New Orleans. In 1881 he published *The Rise and Fall of the Confederate Government*, giving his view of the controversy. His remains were removed from New Orleans and interred at Richmond in 1893, where a monument has been erected in his honor.

DAVIS, JOHN WILLIAM (1873-), lawyer, statesman, and diplomat, in 1924 the Democratic nominee for President of the United States, was born in Clarksburg, W. Va. He was graduated from the departments of liberal arts and law of Washington and Lee University, and taught law there for a year. Private law practice followed, and led to public service. Successively Davis was a member of Congress for two terms (1910-1914), then solicitor-general of the United States. In 1918 he was appointed ambassador to Great Britain, but resigned in 1921 because of the heavy financial burden imposed. The Democratic national convention of 1924 battled for nearly three weeks to select a Presidential nominee. On the 103rd ballot Davis was named, and to placate William J. Bryan, who was opposed to Davis, his brother, Governor Charles W. Bryan of Nebraska, was nominated for Vice-President. The ticket was defeated by Coolidge, and Davis returned to a lucrative law practice.

DAVIS, REBECCA HARDING (1831-1910), an American novelist, the first writer to



bring the labor question into American fiction. Mrs. Davis was born in Washington, Pa. She first became known for the gloomy power of a story, *Life in the Iron Mills*, published (1861) in the *Atlantic Monthly*. After her marriage to L. Clarke Davis, editor of the Philadelphia *Inquirer*, much of her brilliant talent went into journalistic work which has not been preserved. Among her novels are *Dallas Galbraith*, *Kent Hampden* and *A Law unto Herself*.

DAVIS, RICHARD HARDING (1864-1916), a very popular American novelist, short-story writer and journalist, the son of Rebecca Harding Davis, was born at Philadelphia. He was educated at Lehigh and Johns Hopkins universities, and began literary work as a newspaper reporter in Philadelphia. After serving for a time on the staff of the New York *Evening Sun*, he became managing editor of *Harper's Weekly*. This position he held but a short time. *Gallergh and Other Stories*, published in 1891, first gained him wide attention. Among his later popular and successful books were *Van Bibber and Others*, *Soldiers of Fortune*, *Ransom's Folly*, and *Cuba in War Time*.

He gained fame as a war correspondent; his reports from the battle fronts of Europe (1914-1916) were classics.

DAVIS STRAIT, a narrow sea which separates Greenland from Baffin Land, and unites Baffin Bay with the Atlantic Ocean. It is from 180 to 500 miles wide and was discovered in 1585 by John Davis, after whom it was named.

DAVY, HUMPHRY, Sir (1778-1829), a distinguished English chemist. He was appointed professor of chemistry in the Royal Institution at the age of twenty-four. In 1803 he was chosen a member of the Royal Society. His discoveries with the galvanic battery, his decomposition of the earths and alkalies and the ascertaining of their metallic bases gave him a worldwide reputation. From his investigation of firedamp in mines, he was led to the invention of a safety lamp, which has rendered the mines comparatively free from explosions and thus prevented the death of thousands of workmen.

DAWES, CHARLES GATES (1865-), financier and publicist. He was born in Marietta, Ohio, graduated from Marietta College in 1884, and from the Cincinnati Law School in 1886. He practiced law in Lincoln, Neb. until 1894. Business interests led him

to Chicago, where he organized, in 1902, the Central Trust Co. of Illinois. He performed conspicuous public service as Comptroller of the Currency, 1897-1902; as chairman of the General Purchasing Board of the American Army in France, 1917-1918; as first Director of the Federal Budget, 1921; and as Chairman of an international committee of experts on German reparations, 1923-1924. He was elected Vice-President of the United States on the Republican ticket in 1924.

In 1929 he was appointed United States Ambassador to Great Britain; he resigned in 1932 and reentered the banking business.

DAWSON, GEORGE MERCER (1849-1901), a Canadian geologist and explorer, born in Truro, N. S. He became a member of the staff of the Geological Survey in 1875, and was its director in 1895. He explored a large portion of the western country and made known its mineral resources. He was a member of the Bering Sea Commission.

DAWSON, JOHN WILLIAM, Sir, (1820-1899), a Canadian geologist and educator. He received his education at Edinburgh University and at an early age turned his attention to geology. In 1842 he accompanied Sir Charles Lyell on an expedition to examine the geology of Nova Scotia. In 1855 he was made principal and professor of geology in McGill University, Montreal, and later vice-chancellor. Among his many contributions to the literature on science are *Acadian Geology*; *The Story of the Earth and Man*; *The Origin of the World*; *Egypt and Syria*; *Modern Ideas of Evolution*, and *The Change of Life in Geological Time*.

DAWSON, YUKON TERRITORY, is a city in Canada, the capital of the district, on the right bank of the Yukon River, 330 miles northwest of Skagway. The river is open to navigation from June 1 to October 15. There are several churches, schools, hotels and theaters, and the town is lighted by electricity. Dawson is the center of the Klondike gold mining region; its origin dates from the discovery of gold on Bonanza Creek in 1896. Coal deposits have been found nearby. Population, 1931, 819.

DAY, the time occupied by the revolution of the earth on its axis, embracing the period of darkness as well as the interval of daylight. The day in the latter sense may be measured in more than one way. If we measure it by the apparent movement of the stars, caused by the rotation of the earth on

its axis, we must call day the period between the time when a star is on the meridian and when it again returns to the meridian, this is a *sidereal* day. It is uniformly equal to 23 hours, 56 minutes, 4.098 seconds. But more important than this is the *solar* day, or the interval between two passages of the sun across the meridian of any place. The latter is about four minutes longer than the sidereal day, owing to the revolution of the earth round the sun, and it is not of uniform length, owing to the varying speed at which the earth moves in its orbit and to the obliquity of the ecliptic. For convenience, an average length of the solar day is taken, and this gives us the *mean solar* or *civil* day of twenty-four hours, the difference between which and the actual solar day at any time is the *equation of time*.

The length of the days and nights at any place varies with the latitude and season of the year, owing to the inclination of the earth's axis. In the first place, the days and nights are equal all over the world on the 21st of March and the 21st of September, which dates are called the *vernal* (spring) and *autumnal equinoxes*. Again, the days and nights are always of equal length at the equator, which, for this reason, is sometimes called the *equinoctial* line. With these exceptions, we find the difference between the duration of the day and the night varying more and more as we recede from the equator.

The word *day* is also applied in popular speech to the period of time when the sun is above the horizon. In this sense it is used in distinction to *night*.

The Babylonians began the day at sunrise; the Jews at sunsetting; the Egyptians and Romans at midnight, as do most modern peoples. The civil day in most countries is divided into two portions of twelve hours each. The abbreviations P. M. (post meridiem), afternoon, and A. M. (ante meridiem), forenoon, indicate these divisions. The Italians in some places reckon the day from sunset to sunset and enumerate the hours up to twenty-four; the Chinese divide it into twelve parts of two hours each. For astronomical purposes the day is divided into twenty-four hours, instead of two parts of twelve hours. Formerly the English day began at noon, but since January 1, 1885, the day of twenty-four hours begins at midnight at Greenwich observatory; and this

reckoning is now generally adopted for astronomical purposes throughout the world.

Varying Lengths of Days. At the equator the days and nights are of equal length. In the higher latitudes variation becomes marked as the poles are approached. In the table below, the daylight period at different latitudes is shown on the longest and shortest days of the year, June 21 and December 21:

LATITUDE	LONGEST DAY JUNE 21		SHORTEST DAY DECEMBER 21	
	HRS.	MIN.	HRS.	MIN.
10°	12	hours 35 min.	11	hours 25 min.
20°	13	hours 12 min.	10	hours 47 min.
30°	13	hours 56 min.	10	hours 4 min.
40°	14	hours 51 min.	9	hours 9 min.
50°	15	hours 9 min.	7	hours 51 min.
60°	15	hours 30 min.	5	hours 30 min.
	18	hours		

At the poles there is daylight for six months, followed by six months of darkness.

DAYLIGHT SAVING, a popular plan for conserving daylight, thus giving workers in summer additional daylight hours for recreation. Under the law, as operative for years in Europe and Canada, and in the United States for 1918, clocks and watches were set ahead one hour at midnight on the last Sunday in March and set back an hour on the last Sunday in October. Clock time was observed and little difficulty resulted. Bural opposition to a daylight saving law in the United States brought its repeal after one year's trial. Many cities, however, have adopted it independently for the warmer months, April to October.

DAY LILY, the popular name for a genus of lilies, natives of temperate Asia and Eastern Europe, two species of which are grown in gardens. They have long leaves, growing from the ground, and a branched stem with large, fragrant, white blossoms, the segments of which are united into a tube. The blossoms live only from sunrise to sunset.

DAYTON, Ohio, one of America's most progressive cities, is the county seat of Montgomery County, on the Great Miami River, sixty miles northeast of Cincinnati, on the Cleveland, Cincinnati, Chicago & Saint Louis, the Erie, the Pennsylvania and the Baltimore & Ohio railroads. The city has a beautiful location in the fertile Miami Valley. From the main business portion, the land rises to heights of from 100 to 400 feet, and on these elevations are some of the fine residence sections. Van Cleve Park, along the river, where the first settlers landed, contains the first house built in Dayton, which

now serves as an historical museum. There is a fine soldiers' monument on Main Street near the river bridge. Spanning the rivers are twelve bridges, three of which are beautiful, wide, arched structures of concrete. On an elevation adjoining the city at the west is the central branch of the National Soldiers' Home, which occupies beautiful grounds of about 600 acres.

Dayton was the home of the Wright Brothers, pioneers in aviation, in their honor, Wright Field of 5,000 acres, eight miles east of the city, has been established for aeronautical research for the U. S. Army Air Service. It also provides two large landing fields. The Dayton Airport, north of the city, is a commercial field.

The educational institutions of Dayton include the University of Dayton (Catholic), Bonebrake Theological Seminary (United Brethren), and Central Theological Seminary (Reformed). There are four large hospitals in and near the city. The Dayton public library and museum and the Dayton art institute provide other cultural opportunities. The city's parks and playgrounds are beautiful and extensive, covering more than 1,100 acres.

Industrially, Dayton ranks high among the cities of Ohio. Its manufactures include over 750 different products. Among the most important are cash registers—the largest in the world, electrical refrigerators, computing scales, fare registers, airplanes and accessories, automobile accessories, golf clubs, government stamped envelopes, paper cutting machinery, and publications.

The first settlement in Dayton, in 1796, was made on land purchased from the Indians by two army officers and Jonathan Dayton, after whom the place was named. It was incorporated in 1805, and chartered as a city in 1841. In March, 1913, the city suffered disastrously from a great overflow of the Miami River. Hundreds of lives were lost and millions of property value destroyed. For several days Dayton was entirely cut off from the rest of the world because tracks were washed out and wires were down. Many other towns in the Miami valley also suffered. Extensive flood-protection projects were at once undertaken and Dayton now has adequate insurance against repetition of the flood menace. Dayton is under the commission-city manager form of government, adopted in 1914. Population, 1930, 200,982.

DE, *day*, a French preposition meaning *of*, *from* or *away from*, used in connection with proper names to indicate noble origin or possession of territory, as *Duc de Montmorenci*, *Guy de Maupassant*, *Comte d'Artois*. When the word following the preposition begins with a vowel the *e* is dropped and *d* with an apostrophe is used, as in *d'Artois*. Several French expressions containing *de* or *d'* are heard frequently in English current speech, as *coup d'état* and *table d'hôte*.

DEACONESS, *de'kon əs*, a member of any one of various religious orders of women among Protestant churches. The order of deaconesses seems to have been established during the days of the Apostles, and the functions of the members were to assist the deacons and other officials of the church, especially in the care of women. In the fifth century the order was abolished and was not revived until the early part of the nineteenth century. The first of the modern orders was established in Prussia in 1838, by the United Evangelical Church.

The first order in the United States was established in Saint Andrew's Parish of the Protestant Episcopal Church, Baltimore, in 1855, and in 1888 the general conference of the Methodist Episcopal Church provided for the establishment of an order of deaconesses. The members of the modern orders are required to prepare themselves by special training in schools devoted to this purpose and are usually inducted into office by the authorities of the Church. Their work is similar to that of the early deaconesses, though somewhat more extended, as the requirements of the Church are broader. In the Roman Catholic and some of the Episcopal churches, the work corresponding to that of the deaconesses is performed by sisterhoods.

DEAD-LETTER OFFICE, a division of the Post Office Department to which is sent all mail matter that cannot be delivered. This matter includes all letters and packages that have remained in the office to which they were sent for one month without being called for, and which do not contain any address for their return to the sender; letters, papers and packages that are imperfectly addressed, and articles excluded from the mails by the regulations such as liquids, live animals and explosives.

Each year as many as 16 million letters and parcels reach the dead letter office.

DEAD RECKONING, the calculation of a ship's place at sea, without any observation of the heavenly bodies. It is obtained by keeping an account of the distance the ship has run by the log and of its course steered by the compass, and by rectifying these data by the usual allowance for drift, leeway and winds. Dead reckoning can never be accurate; so whenever possible it is corrected by astronomical observations.

DEAD SEA, called in Scripture SALT SEA, SEA OF THE PLAINS, and EAST SEA, a celebrated lake in southeastern Palestine on the border of Transjordan. Its length is about forty-seven miles, and its breadth at the widest part, nine miles. The basin in which the Dead Sea lies forms the south end of the great depression through which the Jordan flows, that river entering the lake at its north extremity. It receives several other tributaries, but has no outlet. The surface is 1,290 feet below the level of the Mediterranean. It lies deeply imbedded between lofty cliffs of naked limestone, its shores presenting a scene of indescribable desolation and solitude, encompassed by desert sands and bleak, stony, salt hills. Sulphur and rock salt, lava and pumice abound along its shores. Scientists declare, after exhaustive investigation, that this sea contains incredible riches. On the bottom of the sea, as precipitates, and held in solution in the water, are valuable chemicals which if all could be reclaimed would be worth easily twelve hundred million dollars. The water is nauseous to the taste and smell, and it is so buoyant that the human body will not sink in it. The Dead Sea contains no life. It is shallow in part, but has in one spot a depth of 1,308 feet.

DEADWOOD, S. D., the county seat of Lawrence County, near the western boundary of the state, on the Chicago, Burlington & Quincy and the Chicago & North Western railroads and on an electric line. The city is in the center of a rich gold belt, and cyanide works, smelters and other mining industries are located here. Among the important buildings are a Masonic Temple, a Carnegie Library, the Stilwell Curio Museum, the U. S. Assay Office and a Federal building. The place was settled in 1876. Population, 1890, 2,559.

DEAF, *def.*, AND DUMB (or **DEAF-MUTES**), persons who cannot hear or speak. Some mutes are speechless because of de-

fects of the vocal organs, but there are many whose inability to articulate sounds arises from their never having heard those sounds. Human beings learn to speak through imitation of others whom they hear. There are two forms of deafness, *congenital* (existing from birth), and *acquired*.

Among the causes assigned for congenital deafness are the intermarriage of near relatives, hereditary transmission, scrofula, certain local or climatic conditions and arrest of development before birth. Acquired or accidental deafness, which occurs at all ages, is frequently due to such diseases as smallpox, measles, typhus, paralysis and other affections of the brain, but more particularly to scarlet fever, which may leave the patient deaf because the inflamed state of the throat extends to the internal ear, and thus causes the formation of pus and the destruction of the extremely delicate parts of the auditory apparatus.

The necessity of communication and the want of words oblige the deaf-mute to observe and imitate the actions and expressions which accompany various states of mind and of feeling, to indicate objects by their appearance and use, and persons by some peculiar mark, and to describe their actions by direct imitation. In this way he and his friends are led to form a dialect of that universal language of attitude, gesture and expression which becomes a substitute for words in the hands of the pantomimic actor, and which adds force and clearness to the finest effusions of the orator; in other words, the natural sign language, which, in its elements, is to be found among all nations. Such a means of communication is at its best very imperfect, however, and various more perfect systems have been devised to enable deaf-mutes to communicate with one another and with the rest of mankind, and thus to gain such an education as people in general possess.

Education of the Deaf and Dumb. In ancient times and during most of the Middle Ages, the deaf were considered incapable of caring for themselves and could not enter upon a contract. In 1648 John Bulwer published a work in English advocating the education of deaf-mutes. About one hundred years later the first public demonstration of the practicability of such education was made. At about the same time a successful system of instruction was introduced

into the Royal Parisian Institute, where it was followed for a long time. The vocal system of instruction was introduced into Germany in 1779, and the first public institute in England was established in 1792.



DEAF AND DUMB ALPHABET
For one hand

From this originated the London Asylum on Kent Road. The first school for the instruction of deaf in the United States was established at Hartford, Conn., in 1817. For a time this school received inmates from the New England states and from South Carolina and Georgia. Massachusetts then established an institute, and other states followed, until now every state has an institution for the education of deaf-mutes, and several states have provisions for establishing classes in connection with the public schools. In the entire country there are over 150 state, private and public day schools for the deaf; Canadian cities maintaining such institutions include Montreal, Quebec, Toronto, Winnipeg and Victoria.

There are two methods of instruction which are generally followed. These are known as the *sign* method and the *oral* method. According to the first, the pupils are taught by the manual alphabet and by signs. According to the oral method the pupils are taught to observe the lips and other vocal organs of the teacher and then to reproduce the sounds. In the teaching of deaf chil-

dren to speak, the pupils not only are expected to observe the motions of the organs, but are required to place their hands upon the throat of the teacher and feel the vibrations, then to place their hands upon their own throats and reproduce these vibrations. In some schools the Bell system of visible speech (which see) has replaced the method just described. The Bell system consists of a series of alphabetical characters based on the position of the vocal organs when they are moving. In the most up-to-date schools pupils learn lip reading in connection with the study of vocal sounds. By observing the motion of the lips they learn to recognize words and can thus carry on conversations with comparative ease.

Opinion has been divided on the advantages to be derived from each of these methods of instruction. Those who favor the sign method claim that it is much more easily learned, and that the pupils therefore can make more rapid progress; while the opponents of this system claim that the use of the



DEAF AND DUMB ALPHABET

For two hands

sign language is not calculated to develop the intellect, and that pupils trained by this method never receive as broad an education or become as efficient thinkers as those trained by the oral method. The general trend of opinion is decidedly in favor of the oral method, and in the greater number of American schools the sign method is not used. See KELLER, HELEN A.; SIGN LANGUAGE.

There is a growing body of literature on the subject of the education of the deaf, much

of which is especially helpful to parents of afflicted children. Mention should be made particularly of John D Wright's *What the Mother of a Deaf Child Ought to Know*, and recent volumes of the *Volta Review*, published by the Volta Bureau at Washington, D. C.

DEARBORN, HENRY (1751-1829), an American soldier who distinguished himself in many battles of the Revolution and in the War of 1812. He was captured by the British at Quebec, but was released and was with Washington at Yorktown. In 1793 he was elected to Congress, and for eight years he was Secretary of War. His last public service was as minister to Portugal. Fort Dearborn, on the site of Chicago, was named for him.

DEATH, the final condition of all animal and vegetable matter, characterized by the stoppage of all growth and motion. Human beings die when the heart stops beating, for this means arrest of the circulation and of the supply of nourishment to the tissues. Throughout life some of the body cells are always dying, and new ones are taking their places. The living body is therefore undergoing a continuous battle with death; we begin to die as soon as we begin to live. The subject of increasing the span of man's life by control of disease is one of the vital questions of the present day. In general, the death rate among civilized nations is gradually being lowered as knowledge of hygiene and sanitary science is increasing.

DEATH'S HEAD MOTH, a large moth, measuring five inches when the wings are extended. It has upon the back of its thorax marks closely resembling a skull, or death's head. Although the subject of many superstitious beliefs, it is probable that it



DEATH'S HEAD MOTH

does no other damage than occasionally attacking bees and consuming their honey.

DEATH VALLEY, a desolate, arid plain bordered by mountains, situated near the

eastern boundary of California, in Inyo County. During the rush to the gold fields in 1849, a band of emigrants lost most of their company in this barren region, and the name which they gave the valley has been retained. Death Valley is about 150 miles long and varies in width from ten to thirty miles. Its lowest point is 276 feet below sea level. Notwithstanding the general aridity of the region, several kinds of animals and many varieties of plants exist there.

In order to preserve the national wild life of the region, Death Valley was given, by presidential proclamation in 1933, the status of a national monument. Permits to prospectors are issued only by authority of the Secretary of the Interior.

DEBATE, *debayt'*, a formal discussion carried on by two opponents or two teams of opponents, in which each side endeavors to prove the truth of certain statements and to refute the arguments presented by the other side. The subject under discussion is generally stated in the form of a resolution, as, "Resolved, That city life is of greater benefit to the individual than country life." The side upholding this resolution is called the *affirmative*; the side presenting arguments against it is the *negative*. Sometimes the subject is framed as a question, as, "Should labor unions be encouraged?" In this case the affirmative side argues on the side of the labor unions, and the negative argues against them.

The first speaker for the affirmative always begins the debate; he is followed by the first speaker for the negative. The second speaker for the affirmative continues, and so on, alternately, until all have spoken once. Finally, the leader for the negative summarizes the arguments for his side, and the debate closes with a summary by the affirmative leader. Usually the decision as to the winner of the debate is left to three judges. They award the decision to the side which has presented the most points and has best answered the points made by the opposing side.

The ideal subject is one which permits a well-balanced argument. The points for and against should be as nearly equally divided as possible, or else one side will have an undue advantage. The resolution should be stated as clearly and as concretely as possible. Ambiguous phrasing leads to con-

fusion of interpretation and prevents a really fair presentation. The subject should not be too general, and it should have enough points of interest to stimulate research and thought. A discussion as to the comparative merits of Grant and Lee is a good selection, because both generals were commanders in chief in the Civil War, and each was the best officer on his side. A debate on the merits of Napoleon and McClellan, on the other hand, is an example of a one-sided discussion. Again, if the subject of woman's rights be debated, the resolution should state clearly what rights are meant, whether voting, the right to hold office, equality in business life, or other right. Debating is an excellent drill for young people. It trains the mind to think logically, it develops ability to express oneself orally, and it trains the judgment. If worth while subjects are chosen it adds to the debater's store of information and gives him valuable training in research work.

Suggested Topics. Below is given a list of subjects appropriate for discussion by a school or neighborhood debating club:

Resolved,

That the censorship of moving pictures should be abolished

That the United States should institute universal military service as a permanent feature.

That the settlement of labor disputes by arbitration should be made compulsory

That the city manager system is preferable to any other form of city control.

That there should be a small property qualification for voters rather than universal suffrage.

That all nations should reduce their navies to one-third their present size.

That credits in Latin should not be required for college entrance

That local option is more effective than state prohibition in dealing with liquor

That the honor system of examinations should be established in our high school

That high school fraternities are undesirable.

That children under fourteen should not be permitted to work for wages.

That the Monroe Doctrine as a feature of the foreign policy of the United States should be abandoned.

That the law forbidding illiterate immigrants to enter the United States should be repealed.

That the Presidential term should be increased to six years and the President be ineligible to succeed himself

That national governments should own and operate all telegraph, telephone and railroad systems.

Outline of a Debate. A subject appropriate for a school debate follows, with arguments for both sides outlined:

Resolved, that capital punishment should be abolished in the United States.

Affirmative

1. Capital punishment is unnecessary, for justice can be meted out to the offenders by means of imprisonment. Society is at the same time protected from their lawlessness.

2. Life imprisonment is a more severe punishment than death, because it makes the offender pay the penalty through a long period of time.

3. Capital punishment has evil effects upon the community, for—

A. It diminishes the sacredness in which human life is held; if the state claims the right to kill its citizens, individuals will feel that they are justified in taking life. Only God has the right to take human life.

B. Capital punishment tends to lower the moral sense of the public, for the details are usually published in all their horror.

C. It often leads to outbursts of sentimentality on the part of the public. Juries will sometimes acquit guilty prisoners rather than give decisions that mean death. Thus the murderer may be freed.

4. Capital punishment is not in accordance with the most enlightened methods of saving the criminal. It should be replaced by reformatory methods.

5. Capital punishment is a relic of a past age when cruelty and revenge were in vogue. This is a humane age, and the best thought of the time is opposed to the death penalty.

Negative

1. Capital punishment is the only sure punishment for grave crimes. An imprisoned murderer always has the hope of being pardoned. There is no sure protection from criminals so long as they are alive.

2. There is no greater punishment to the average person than taking away his right to life.

A. Capital punishment is merely a recognition of the right of the state to protect society from the evil passions of those who defy the law of God and man. A man who takes life is morally bound to pay for his crime with his own life.

B. The fact that newspapers publish news-seating details does not alter the justice of the execution. The papers should be prohibited from featuring such events as executions.

C. Trials for murder should be conducted without publicity. Sentimental outbursts are due to newspaper exploitation.

3. The first duty of the state in dealing with criminals is the protection of society. The fear of death acts as a deterrent on the passions of those who might commit murder, and where capital punishment is in force crimes are decreasing.

DEBORAH, *deb'o rah*, a prophetess of the Israelites, called a "mother in Israel," who lived during the time of the Judges. Her story is related in the book of *Judges*, the fifth chapter of which is a spirited poem called the *Song of Deborah*. It celebrates the victory which the Israelites, led by Deborah and Barak, won over the army of the Canaanites. Deborah was the wife of Lapidoth, and the family dwelt in the hill country of Ephriam, according to the account in *Judges* IV. There is no evidence that the *Song of Deborah* was written by her, though certainly she inspired it.

DEBS, EUGENE VICTOR (1855-1926), an American Socialist of very radical theories. He was the Socialist party candidate for President of the United States in 1900, 1904, 1908, 1912 and 1920, in the latter year he was a Federal prisoner in Atlanta. Debs was born at Terre Haute, Ind. He received a common school education, became locomotive fireman on the Terre Haute & Indianapolis Railroad, and finally was a clerk in a wholesale grocery house. In 1879 he was elected city clerk of Terre Haute and six years later became a member of the Indiana legislature. From 1880 to 1893 he was grand secretary and treasurer of the Brotherhood of Locomotive Firemen, and in the latter year he was made president of the newly organized American Railway Union. In that capacity he had charge of the great western railway strike that centered at Chicago in 1894. During its progress he was charged with conspiracy, but was acquitted; however, he was imprisoned for six months for contempt of court in violating an injunction. From that time on he was an active Socialist leader.

Debs, with many other American Socialists, opposed America's participation in the World War, and in a speech made at Canton, Ohio, in June, 1918, he uttered statements forbidden by the espionage law. For making these statements he was tried, found guilty and sentenced to ten years' imprisonment. In March, 1919, the United States Supreme Court upheld the sentence of the lower court. His radical views did not un-



EUGENE V DEBS

dergo a change thereafter, for before he was taken to prison he reaffirmed his bolshevist principles and declared Lenin and Trotsky of Russia to be the greatest living men. From his prison cell in Atlanta he conducted his campaign to a slight extent, but his influence was confined to the radical element, who made a strong plea for the release and pardon of the candidate. In December, 1921, he received a commutation of sentence from President Harding, and was released.

DEBT, *det*, in the most general sense, that which is due from one person to another, but more strictly, in law, a sum of money due by reason of a particular and explicit agreement.

People are usually urged to avoid contracting debts under the conviction that indebtedness is a mortgage upon a person's future and therefore exceedingly dangerous. To contract debts for unnecessary purchases is properly frowned upon by economists, but there is a class of debts which are declared to be wholesome. To borrow money for business or home development, where the investment is permanent and there are very reasonable prospects of payment, has long been sanctioned. A proper debt serves as an incentive to honest endeavor.

An action to recover the amount of a debt is begun by civil suit, which may result in a judgment payable in money, or, in lieu of voluntary payment, by forcible seizure of enough of the debtor's property to pay the debt and the costs of the suit. Courts, however, still possess the right to punish severely and even to imprison debtors, where fraud or concealment of deception is evident.

Related Articles. Consult the following titles for additional information:

Bankruptcy Embodiment
Contract Garnishment

DEBT, NATIONAL See NATIONAL DEBT

DEBUSSY, *de bu'sé*, CLAUDE ACHILLE (1862-1918), a French composer, leader of the modern school of music in France. He is the exponent of the highest refinement in composition, and has had wide influence not only in France but in Spain, England and America. Debussy was educated at the Paris Conservatory, where he won several prizes, including the Grand Prix de Rome. After producing a number of miscellaneous works for piano and orchestra, he created a sensation in 1902 with a music drama, *Pelleas and Melisande*, a work that gave him an undisputed place at the head of the new French

school. Since then he has made numerous other contributions to the world's body of written music, notably the ballets *Joux* and *Crimen Amoris*, four music dramas and several songs.

DECALOGUE, *dek'ə log*, the Ten Commandments, which, according to *Exodus* XX and *Deuteronomy* V, were given by God to Moses on two tables of stone. The Jews called them the *ten words*, and the term *decalogue* is made up of the Greek words for *ten* and *word*. Christians have divided the Ten Commandments differently; and in some Roman Catholic catechisms the second Commandment has been united with the first, and the tenth has been divided into two.

DECATUR, Ill., the county seat of Macon County, thirty-eight miles east of Springfield, on the Sangamon River and on the Illinois Central, the Wabash, the Pennsylvania, and the Baltimore & Ohio railroads. There is an airport. The city is in a fertile agricultural section, and ships large quantities of grain, live stock and coal. There are large grain elevators, flour mills, railroad shops and manufactories of iron, agricultural implements, soda fountains and cereals. The city has James Millikin University and Conservatory of Music. The commission form of government has been in force for a number of years. Population, 1920, 43,818; in 1930, 57,510, a gain of 31 per cent.

DECATUR, STEPHEN (1779-1820), one of the early heroes of the American navy, was born in Simeon's Puxent, Md. In 1798 he entered the navy, and in 1803 he was given command of the *Enterprise*. The recapture and destruction of the United States frigate *Philadelphia*, which had been taken by the Tripolitans, was a daring act which won him promotion to the rank of captain. In 1812, while commander of the frigate *United States*, he encountered the British frigate *Macedonian* and captured her. On his way to sea through Long Island Sound, in 1813, Decatur's vessel was blockaded by the British fleet, and he was driven into New London where he was kept for a year by a blockade. In 1815 he was sent with a squadron of nine vessels to the Medi-



STEPHEN
DECATUR

anean, captured two Algerine vessels and compelled the dey of Algiers to negotiate a treaty. He then entered Tunis and Tripoli, forced the release of the American prisoners and obtained satisfaction for past offenses. His death was caused by a wound received in a duel with Commodore Barron.

DECAN, *dekan'*, a term once applied to the entire peninsula of India, but which more precisely refers to the state of Hyderabad and those territories which once formed a part of that Moslem state but which were ceded to the British in 1859.

DECEMBER, *de sem'ber*, the twelfth month of the year. The name comes from the Latin *decem*, meaning *ten*, because in the Roman year, instituted by Romulus, it constituted the tenth month, the year beginning with March. In December the sun enters the tropic of Capricorn and passes the winter solstice. This month has thirty-one days. The birthstone for December is the turquoise, and its special flower is the holly.

Special Days for Observance. *Christmas* is the most important festival of the month of December. See **CHRISTMAS**.

New Year's Eve, the last day of the month, is a time of special festivities.

Forefathers' Day, December 21, is celebrated in some parts of New England in remembrance of the landing of the Pilgrim Fathers.

Anniversaries for Celebration. The following birthdays of notable persons fall in December:

Thomas Carlyle, December 4, 1795
Martin Van Buren, December 5, 1782
George A. Custer, December 5, 1839
Mary Queen of Scots, December 7, 1542
Eli Whitney, December 8, 1765
Joel Chandler Harris, December 8, 1843
John Milton, December 9, 1608
William Lloyd Garrison, December 10, 1805
Edward Eggleston, December 10, 1837
Phillips Brooks, December 13, 1835
Jane Austen, December 16, 1775
Sir Humphry Davy, December 17, 1778
John Greenleaf Whittier, December 17, 1807
Lyman Abbott, December 18, 1835
Edward A. MacDowell, December 18, 1861
Cyrus Townsend Brady, December 20, 1861
Clara Barton, December 25, 1821
Sir Isaac Newton, December 25, 1642
Woodrow Wilson, December 28, 1856
William E. Gladstone, December 29, 1809

The following important events occurred in December:

Reading in Congress of President's message containing the Monroe Doctrine, December 2, 1823

Illinois admitted to the Union, December 3, 1818
 Rome made capital of United Italy, December 5, 1870
 Columbus discovered Hayti, December 6, 1492
 Death of Jefferson Davis, December 6, 1888
 Bucharest, capital of Rumania, captured by Germans, December 6, 1916
 Formation of the Australian Confederation, December 9, 1855
 Mississippi admitted to the Union, December 10, 1817
 Indiana admitted to the Union, December 11, 1816
 Delhi made capital of India, December 12, 1911
 Alabama admitted to the Union, December 14, 1819
 President Wilson arrived in Paris, December 14, 1918
 Boston "Tea Party," December 16, 1773
 Landing of the Pilgrims, December 21, 1620
 Organization of the Methodist Episcopal Church in America, December 24, 1784
 Washington crossed the Delaware, December 25, 1776
 Iowa admitted to the Union, December 28, 1846
 Texas admitted to the Union, December 29, 1845
 First American Y M C A established in Boston, December 29, 1851

DECEMVIRS, *des sem'virs*, (Latin, *decem*, ten, and *vr*, man), a board of ten men; specifically, the body of ten magistrates who had absolute authority in ancient Rome, 451-449 B C. Those who officiated during the first of these years drew up an excellent code of laws and ruled wisely, but those who followed them were tyrannical and were driven from power.

DECIDUOUS, *desid'u us*, TREES. The word *deciduous* is from the Latin, and means to fall down. A deciduous tree is one whose leaves fall off at a fairly regular time every autumn and are as regularly renewed in the spring. Nearly all forest trees are of this variety. While in most countries the loss of leaves is in the autumn, in some parts of the world the change from foliage to bareness is governed by arrival of the dry season. Those trees which are not deciduous are evergreen (which see).

DECIMAL FRACTIONS, *des'mal frak'shunz*. See ARITHMETIC

DECLARATION, in law, the first pleading in an action, submitted in writing and accompanied by affidavit. All the facts alleged must be set forth, for they constitute the plaintiff's whole cause for action. If such is not the case, the defendant by demurrer may have the case dismissed.



DECLARATION OF INDEPENDENCE, the solemn declaration of the Continental Congress in America, in session at Philadelphia, by which the thirteen colonies formally renounced allegiance to the government of Great Britain. It was the outgrowth of a gradual change of sentiment among the colonists, away from the old affection for England and its

traditions toward a pride in local achievements and the love of the principles of self-government. The formal declaration was preceded by resolutions in the assemblies of almost all of the colonies, declaring that independence was inevitable and necessary. Finally, on May 15, 1776, John Adams offered a resolution recommending that each state form its own independent government, and on June 7 another formal resolution was introduced by Richard Henry Lee, declaring—

That these United Colonies are and of right ought to be, free and independent States, that they are absolved from all allegiance to the British Crown, and that all political connection between them and the State of Great Britain is, and ought to be, totally dissolved.

That it is expedient forthwith to take the most effectual measures for forming foreign alliances,

That a plan of confederation be prepared and transmitted to the respective colonies for their consideration and approbation.

After a long and somewhat bitter debate, in which the representatives of New York and Pennsylvania opposed the resolution, causing a delay of some weeks, it was passed on July 1, New York alone still withholding its approval. A committee to draft a declaration had been appointed on June 10, consisting of Thomas Jefferson of Virginia, John Adams of Massachusetts, Benjamin Franklin of Pennsylvania, Roger Sherman of Connecticut and Robert R. Livingston of New York. As it was presented the Declaration was the work chiefly of Thomas Jefferson, and was adopted with few changes, on July 4, by twelve colonies, New York adding its approval on July 9. The document was endorsed and signed on August 2, 1776. The news of the adoption on July 4 caused the wildest rejoicing in all parts of the country.

and did much to produce unity of sentiment throughout the colonies. The original document is now in the State Department, and is sealed in a steel case for preservation among the priceless relics of the nation.

The Text. The Declaration of Independence, as adopted, is in full as follows:

THE UNANIMOUS DECLARATION OF THE THIRTEEN UNITED STATES OF AMERICA

When, in the course of human events, it becomes necessary for one people to dissolve the political bands which have connected them with another, and to assume, among the Powers of the earth, the separate and equal station to which the laws of nature and of nature's God entitle them, a decent respect to the opinions of mankind requires that they should declare the causes which impel them to the separation.

We hold these truths to be self-evident: that all men are created equal, that they are endowed by their Creator with certain inalienable rights, that among these are life, liberty, and the pursuit of happiness. That to secure these rights, governments are instituted among men, deriving their just powers from the consent of the governed; that whenever any form of government becomes destructive of these ends, it is the right of the people to alter or to abolish it, and to institute a new government, laying its foundation on such principles, and organizing its powers in such form, as to them shall seem most likely to effect their safety and happiness. Prudence, indeed, will dictate that governments long established should not be changed for light and transient causes, and accordingly all experience hath shown that mankind are more disposed to suffer, while evils are sufferable, than to right themselves by abolishing the forms to which they are accustomed. But when a long train of abuses and usurpations, pursuing invariably the same object, evinces a design to reduce them under absolute despotism, it is their right, it is their duty, to throw off such government, and to provide new guards for their future security. —Such has been the patient sufferance of these colonies, and such is now the necessity which constrains them to alter their former systems of government. The history of the present king of Great Britain is a history of repeated injuries and usurpations, all having in direct object the establishment of an absolute tyranny over these States. To prove this, let facts be submitted to a candid world.

He has refused his assent to laws the most wholesome and necessary for the public good.

He has forbidden his governors to pass laws of immediate and pressing importance, unless suspended in their operation till his assent should be obtained, and when so suspended, he has utterly neglected to attend to them.

He has refused to pass other laws for the accommodation of large districts of people, unless those people would relinquish the right of representation in the legislature, a right

inestimable to them and formidable to tyrants only.

He has called together legislative bodies at places unusual, uncomfortable, and distant from the depository of their public records, for the sole purpose of fatiguing them into compliance with his measures.

He has dissolved representative houses repeatedly, for opposing, with manly firmness, his invasions on the rights of the people.

He has refused, for a long time after such dissolutions, to cause others to be elected, whereby the legislative powers, incapable of annihilation, have returned to the people at large for their exercise, the State remaining, in the meantime, exposed to all the dangers of invasion from without, and convulsions within.

He has endeavored to prevent the population of these States, for that purpose obstructing the laws for naturalization of foreigners, refusing to pass others to encourage their migration hither, and raising the conditions of new appropriations of lands.

He has obstructed the administration of justice, by refusing his assent to laws for establishing judiciary powers.

He has made judges dependent on his will alone for the tenure of their offices, and the amount and payment of their salaries.

He has elected a multitude of new offices, and sent hither swarms of officers to harass our people and eat out their substance.

He has kept among us, in times of peace, standing armies without the consent of our legislatures.

He has affected to render the military independent of and superior to the civil power.

He has combined with others to subject us to a jurisdiction foreign to our constitution, and unacknowledged by our laws, giving his assent to their acts of pretended legislation.

For quartering large bodies of armed troops among us.

For protecting them, by a mock trial, from punishment for any murders which they should commit on the inhabitants of these States.

For cutting off our trade with all parts of the world.

For imposing taxes without our consent.

For depriving us, in many cases, of the benefits of trial by jury.

For transporting us beyond seas to be tried for pretended offenses.

For abolishing the free system of English laws in a neighboring province, establishing therein an arbitrary government, and enlarging its boundaries, so as to render at once an example and fit instrument for introducing the same absolute rule into these colonies.

For taking away our charters, abolishing our most valuable laws, and altering fundamentally the forms of our government.

For suspending our own legislatures, and declaring themselves invested with power to legislate for us in all cases whatsoever.

He has abdicated government here, by declaring us out of his protection, and waging war against us.

He has plundered our seas, ravaged our coasts, burnt our towns, and destroyed the lives of our people

He is, at this time, transporting large armies of foreign mercenaries to complete the works of death, desolation and tyranny, already begun, with circumstances of cruelty and perfidy scarcely paralleled in the most barbarous ages, and totally unworthy the head of a civilized nation

He has constrained our fellow-citizens, taken captive on the high seas, to bear arms against their country, to become the executioners of their friends and brethren, or to fall themselves by their hands

He has excited domestic insurrections amongst us, and has endeavored to bring on the inhabitants of our frontiers, the merciless Indian savages, whose known rule of warfare is an undistinguished destruction of all ages, sexes, and conditions

In every stage of these oppressions we have petitioned for redress in the most humble terms: our repeated petitions have been answered only by repeated injuries. A prince, whose character is thus marked by every act which may define a tyrant, is unfit to be the ruler of a free people.

Nor have we been wanting in attention to our British brethren. We have warned them, from time to time, of attempts by their legislature to extend an unwarrantable jurisdiction over us. We have reminded them of the circumstances of our emigration and settlement here. We have appealed to their native justice and magnanimity, and we have conjured them by the ties of our common kindred to disavow these usurpations, which would inevitably interrupt our connections and correspondence. They too have been deaf to the voice of justice and of consanguinity. We must, therefore, acquiesce in the necessity which denounces our separation, and holds them, as we hold the rest of mankind, enemies in war, in peace friends.

We, therefore, the Representatives of the United States of America, in general Congress assembled, appealing to the Supreme Judge of the world for the rectitude of our intentions, do, in the name, and by authority of the good people of these colonies, solemnly publish and declare, That these United Colonies are, and of right ought to be, free and independent States, that they are absolved from all allegiance to the British crown, and that all political connection between them and the State of Great Britain is, and ought to be, totally dissolved; and that, as free and independent States, they have full power to levy war, conclude peace, contract alliances, establish commerce, and to do all other acts and things which independent States may of right do. And for the support of this declaration, with a firm reliance on the protection of Divine Providence, we mutually pledge to each other our lives, our fortunes, and our sacred honor.

(Signed) John Hancock

New Hampshire—Josiah Bartlett, Wm Whipple, Mathew Thornton

Massachusetts Bay—Saml. Adams, John Adams, Robt. Treat Paine, Elbridge Gerry, Rhode Island—Step. Hopkins, William Ellery.

Connecticut—Roger Sherman, Sam'l Huntington, Wm. Williams, Oliver Wolcott.

New York—Wm. Floyd, Phil. Livingston, Frans Lewis, Lewis Morris

New Jersey—Richd. Stockton, Jno. Wither-spoon, Fras Hopkinson, John Hart, Abra. Clark

Pennsylvania — Robt. Morris, Benjamin Rush, Benja Franklin, John Morton, Geo. Clymer, Jas Smith, Geo Taylor, James Wilson, Geo Ross

Delaware—Caesar Rodney, Geo. Read, Tho. M'Kean

Maryland—Samuel Chase, Wm. Paca, Thos. Stone, Charles Carroll of Carrollton.

Virginia—George Wythe, Richard Henry Lee, Th Jefferson, Benja Harrison, Thos. Nelson, Jr., Francis Lightfoot Lee, Carter Braxton

North Carolina — Wm. Hooper, Joseph Hewes, John Penn

South Carolina—Edward Rutledge, Thos. Heyward, Junr., Thomas Lynch, Junr., Arthur Middleton

Georgia—Button Gwinnett, Lyman Hall, Geo Walton

DECLARATION OF WAR. See **WAR, DECLARATION OF.**

DECLINATION, in astronomy, the distance of a heavenly body from the celestial equator, measured on a great circle passing through the pole and also through the body. It is said to be north or south according as the body is north or south of the equator. Great circles passing through the poles and cutting the equator at right angles are called *circles of declination*. Twenty-four circles of declination, dividing the equator into twenty-four arcs of 15° each, are called *hour circles*. Declination, then, corresponds to latitude on the earth and is one of the two elements in determining the location of heavenly bodies. In other words, if the right ascension and the declination of a star are known, astronomers can locate it at once (see **ASCENSION, RIGHT**). Declination of the magnetic needle in the compass, or *magnetic declination*, is the variation of the magnetic needle from the true meridian of a place.

DECOMPOSITION, *de kom'po zish'un*, is the breaking up of a compound into more simple parts. These parts may be either compounds or elements. In most cases decomposition separates one body into two or more bodies, but what is called double decomposition is a change or breaking up of two or more compounds into the same number of

other compounds. Decomposition may be caused by such forces as heat, light, electricity and chemical reagents; or it may be due, as in the case of vegetable and animal matter, to very small animals or plants, called bacteria and ferments.

DECORATION DAY, a popular term applied to Memorial Day (which see).

DECOY, *de kō'*. In the United States and Canada a decoy is an artificial bird, made of wood and painted faithfully to represent a living bird. It is placed on the water, where it floats about in a lifelike manner, and thus attracts live birds of the same kind to the spot, where they may be shot by concealed hunters. Duck decoys are the most common. In every-day speech, anything which is a lure or a snare is called a decoy.

DEDUCTION, *de duk'shun*, in logic, is the process of reasoning from a general statement to a particular fact, from an abstract theory to a concrete case, from the universal to the individual. An excellent example of the deductive method is afforded by the reasoning followed by Leverrier in his discovery of the planet Neptune. In the latter part of the seventeenth century Sir Isaac Newton worked out the theory of universal gravitation; namely, that every particle of matter in the universe exerts an attractive force on every other particle.

Working from this theory (to cite an example), the French astronomer Leverrier figured that there must be an undiscovered planet in the heavens which was causing irregularities in the motions of the known planets. That is, he used the general theory that gravitation is everywhere in operation, and he worked to the concrete fact that there was a planet in a particular region in the heavens, because only the attractive force of such a planet could account for certain disturbances in the motions of the planets. Shortly after he published his deductions Neptune was discovered in the place indicated by him.

The opposite method of reasoning, called *induction*, is explained under that heading.

DEDUCTIVE METHOD, in pedagogics, the method of teaching which begins with general truths, such as definitions and rules, and proceeds to apply them to particular facts. It is also called the *synthetic method*, because it creates individual ideas under general laws. It is the reverse of the inductive method and is adapted to much of

the work in grammar grades and predominates in teaching in high schools, colleges and universities. Geometry affords an excellent illustration of a branch which is taught by the deductive method. The theorems are the general truths with which the pupil starts, and he proceeds to prove these by the demonstration of particular propositions. See *INDUCTION*; *METHODS OF TEACHING*.

DEE, the name of two rivers in Scotland. The larger rises in the neighborhood of Ben Macdui, and after a course of twelve miles it is joined by the Gearley, runs through Aberdeenshire and a part of Kincardineshire and empties into the North Sea. It is ninety miles long. The smaller Dee rises near the northern boundary of Kirkcudbrightshire. It flows in a southeasterly direction during the first part of its course, and then westerly, falling into the Solway Firth. It is fifty miles long and is noted for its excellent fisheries.

DEED, a written agreement, sealed and delivered, whereby a transfer of title is effected. In popular use the word is applied only to transfers of land, but in law it is applied to many other transactions. In fact whether or not a certain document is a deed or not depends on its form, not on the property involved. Transfers of personal property, title to office, and contracts of almost any kind may be in the form of deeds.

A deed, under the common law, was not valid unless it was sealed and actually delivered to the person named to receive title, who is legally known as the "party to be benefited." Most of the states still require a seal, though in a few it has been abolished; in most of them, moreover, the word *Seal* written within a ring or a scroll, may be substituted for the actual wax seal. The important point is not that the seal must be there, but that it must be there as the act of the person or persons to be bound by it. It must be his "own act and seal."

A deed being a form of contract, it must be executed by persons legally capable of binding themselves, should name a consideration, and should fulfil the other requirements of a contract (see *CONTRACT*). Frequently the parties to a deed prefer not to let other people know how much money was involved. In such a case, the deed may mention a "nominal consideration," as one dollar. The deed is exactly as binding as if it

stated the exact number of dollars for which the property was actually sold. A deed must always be on paper or parchment; it may be written, typewritten or printed. It must contain the names of the grantor and the grantee, and it should, for safety, be signed by both parties in the presence of witnesses, even if the laws of the particular state do not require signatures, as shown in the following form of warranty deed:

THE GRANTOR, Arthur Jones, of the city of Topeka, in the county of Shawnee and state of Kansas, for and in consideration of the sum of seven thousand five hundred dollars, in hand paid, give, grant, sell and convey to Frank Rawson Walsh, also of the city of Topeka, county of Shawnee and state of Kansas, the following described Real Estate, to-wit situated in the city of Topeka, in the county of Shawnee, in the state of Kansas

And I, the said Arthur Jones, the grantor, for my heirs, executors and administrators, do covenant with the said Frank Rawson Walsh, the grantee, his heirs and assigns, that I am lawfully seized in fee simple of the aforesaid premises, that they are free from all encumbrances, that I have good right to sell and convey the same to the said Frank Rawson Walsh as aforesaid, and that I will, and my heirs, executors and administrators shall, warrant and defend the same to the said Frank Rawson Walsh, his heirs and assigns forever, against the lawful claims and demands of all persons

Dated, this nineteenth day of October, A D 1945

Witnessed by
Malcolm Cameron (Seal)
Arthur Jones (Seal)
Maurice Lawrence (Seal)
Frank Rawson Walsh (Seal)

In the case of individuals, a deed signed by a married man should also be signed by his wife; in the case of corporations the charters or by-laws usually name the officers who may execute deeds and other contracts.

Warranty and Quit Claim. In some deeds, as in the form above, there is a clause known as the *warranty*. A *quit-claim* deed is one in which the grantor makes no guarantee, but simply conveys whatever title he has. A short form of quit-claim deed is given below:

KNOW ALL MEN BY THESE PRESENTS, that I, Alfred Mason, of the city of Omaha, in the County of Douglas, and State of Nebraska, in consideration of six thousand dollars, in hand paid, do hereby grant, sell, remise, release and forever quit claim unto Chauncey Wilson, of the city of Omaha, in the County of Douglas and State of Nebraska, the following described real estate, situate in the city of Douglas and State of Nebraska (described properly the land or premises granted).

TO HAVE AND TO HOLD the above described premises, with the appurtenances, unto the said Chauncey Wilson and to his heirs and assigns forever.

Signed this tenth day of January, A D 1945.

In the presence of Alfred Mason (Seal)
Francis K Polk Chauncey Wilson (Seal)

Where the grantor's title is perfect, a quit-claim deed is as effectual a transfer as

a warranty deed, except that the grantees must—the courts say, "at his peril"—ascertain whether there are any claims against his title. In other words, by a warranty deed the seller assumes the responsibility for the title; by a quit-claim deed the responsibility rests on the buyer.

Registration. A deed, whether or not the statute requires it should be registered in the county recorder's office. The system of registration has greatly simplified the laws on the subject of deeds, and has made useless much of the early court decision on the subject. Nearly all the states and provinces of Canada have special legislation on the subject of deeds. Grantor and grantee should always be careful that they are following the law of the state or province in which the deed is executed.

Finality of Deeds. From early times deeds have been used for the transfer of land, but their practically exclusive use for this purpose is modern. A deed is, in fact, almost the sole remaining mode of conveying ownership or other interests in land. It is common knowledge that a deed is the most solemn and binding contract respecting property into which a man may enter. This overwhelming finality which has always attached to a deed is probably the result of a fact that deeds were first used in an age when writing was a great accomplishment, common only among the monks and priests. Its solemn character must have become established before the art of writing became more general.

DEER, a general name for certain hooved animals constituting a family in which there are more than fifty species. Some of them are among the most beautiful specimens of animal life.

The distinguishing characteristic of the genus is that the members have solid, branching horns, which they shed every year. These antlers are outgrowths from the bone and are first covered by flesh and a velvety skin, which, when the horns are fully developed, dries up and is rubbed away, leaving the bones bare. The forms of the horns are various; sometimes they spread into broad palms, which send out sharp snags around their outer edges; sometimes they divide fantastically into branches, some of which project over the forehead, while others are reared upward in the air; or they may be so inclined backward that the animal seems

almost forced to carry its head in a stiff, erect posture. After the breeding season the antlers fall off, leaving only a little prominence on the head, from which the new antlers develop with great rapidity. The male deer is called a *buck*; the female, a *doe*; the young, a *fawn*.

There are many species of deer, as the *red deer* or *stag*, the *fallow deer*, the *roe-buck*, the *reindeer*, the *moose*, the *elk*, and the *wapiti*. (See article *GAME*, for illustrations.) Deer are fairly widely distributed over the world, though there are none in Australia and few in Africa, where the antelopes take their place. Hunting the deer is great sport in Northern woods, and the flesh, or *venison*, as it is called, is much desired for the table. However, as deer become scarcer year by year, laws have been passed to protect them, and the hunting season in many states and provinces is restricted to two or four weeks each year. The skin is valuable for making a leather, called *buckskin*, and the antlers and hoofs are used in the manufacture of various kinds of ornamental goods.

Related Articles. Consult the following titles for additional information:

Caribou
Elk

Moose
Reindeer

DE FACTO, *de fak'toh*, a Latin term meaning *actually existing*. A *de facto* government is one which exists and performs the functions of government, regardless of its legal right to existence or whether it represents the majority of the people. Such a government was that of Lenin and Trotzky in Russia, Hitler in Germany, and Mussolini in Italy. See *DE JURE*.

DEFOE, DANIEL (1661-1731), one of the first English novelists, born in London. He was educated for the ministry, but began early to give his attention to literature. His first publications were political satires, notable among them *The True-born Englishman*, a pamphlet in favor of William III, and *The Shortest Way with Dissenters*. The *Apparition of Mrs. Veal*, published in 1706, showed much of the genius for making fiction seem like fact which so strongly marks Defoe's later work.



DANIEL DEFOE

In 1719 appeared *Robinson Crusoe*, reckoned usually as the first English novel, in the modern sense of the term. This was followed by *The Memoirs of a Cavalier, Captain Singleton, Moll Flanders, Journal of the Plague Year* and *Roxana*, which, while they never attained the popularity of his first work, nevertheless possessed many of the qualities which made that remarkable. Defoe's genius consisted in his ability to put himself in the place of his characters and to give without weariness the details which make a story seem real.

DEGENERATION, *de jen er'ashun*, a term applied in biology to certain changes undergone by plant and animal life, whereby there is a falling off in size, productivity, vigor or other qualities. The causes of degeneration include lack of nourishment, disuse, and change of habit. The effect of long-continued disuse of a part or organ is shown in the uselessness of the small toe on the foot of man. Primitive man had flexible toes like those of the monkey, but as civilization caused changes of habit the toes, particularly the small one, degenerated, and the latter seems to be heading toward extinction. The vermiform appendix is an example of an organ which has lost whatever function it may originally have had. Not only do organisms degenerate, but whole classes, and thus is true of the human race and of the lower animals.

The aborigines of Australia are a degenerate race; in the animal world one might cite parasites, sponges and barnacles as examples of degeneration. In the vegetable world we find that plants which are forced to grow for a succession of years in poor soil or an unfavorable climate tend to become inferior. Mental and moral degeneration among civilized peoples is one of the vital questions with which eugenics, sociology and religion have to deal.

DEGLUTITION, *deg lu tish'un*. See *SWALLOWING*.

DEGREE, a term denoting extent or intensity. In mathematics it is the ninetieth part of a right angle, or one of the 360 equal parts into which the circumference of a circle is supposed to be divided. A *degree of latitude* is the 360th part of the earth's circumference north or south of the equator, measured on a great circle at right angles to the equator, and a *degree of longitude* is the same part of the surface east or west of any

given meridian, measured on a circle parallel to the equator.

Degrees are marked by a small ° near the top of the last figure of the number which expresses them; thus, 45° is 45 degrees. The degree is subdivided into sixty equal parts, called minutes; and the minute is again subdivided into sixty equal parts, called seconds; thus, 45° 12' 20" means 45 degrees, 12 minutes and 20 seconds. Under the equator a degree of longitude contains 60 geographical or 69 16 statute miles (see MILE). The degrees of latitude are found to increase in length from the equator to the poles, owing to the shape of the earth. At the equator, 1° of latitude equals about 68 7 miles; at 45°, 1° equals about 69 05 miles.

The term *degree* is also applied to the divisions, spaces or intervals marked on a mathematical, meteorological or other instrument, as a thermometer or barometer.

In Education. The name *degree* is also given to the title bestowed upon one who has successfully completed a prescribed course of study or training. There is no strict uniformity in requirements for a degree in America, so the value of a degree varies. In some schools a knowledge of Greek is required for the degree *bachelor of arts*; in others no such requirement exists. A course of study including languages and philosophy as major divisions leads to the degree named above; if sciences and mathematics or engineering are prominent, the degree given is that of *bachelor of science*. A course in law confers the degree *bachelor of law*. Post-graduate courses lead to the *master's* and *doctor's* degrees.

Men and women of outstanding attainments are frequently granted degrees known as *honorary*. Among these are doctor of philosophy (Ph D)—sometimes worked for, therefore not honorary, doctor of laws (LL D); doctor of civil law (D C L), doctor of literature (Litt D), and doctor of sacred theology (S T D).

DEISTS, a name applied to those theologians and their followers in the seventeenth and eighteenth centuries who believed that the nature of existence of the Deity could be proved from the manifestations of Nature. They disregarded the evidences of revealed religion, as almost universally taught.

DE JURE, de joo're. The term is from the Latin and means *by right*, or *by lawful title*. A *de jure* government is one which exists by

legal right, organized in conformity to law, authorized by the people or accepted by them as the regularly constituted authority. See *DE FACTO*.

DEKALB, JOHANN, Baron (1721-1780), a German soldier who volunteered his services to the new American nation in the Revolutionary War. He was born in Bavaria. DeKalb entered the French army in 1743 and received several promotions, becoming lieutenant-general in 1761. Some years later he was a secret emissary of the French government in America and returned to France with a report favorable to the American cause. In 1777 he was persuaded by American representatives in Europe to join Lafayette's expedition, and upon arrival in America he was made a major-general. He served with credit throughout the war, was second in command to General Gates in the South and commanded the American forces at Camden. In this engagement he received eleven wounds, from which he died.

DE KOVEN, REGINALD (1861-1920), an American musician, one of the foremost composers of light opera. He was born at Middletown, Conn., studied at Stuttgart and Paris, and later attended Oxford University, where he was graduated in 1879. In 1887 he produced a successful light opera, *The Begum*, but his reputation became firmly established with the production of *Robin Hood*, in 1890. This was followed by many other works of similar style, including *Don Quixote*, *The Fencing Master*, *Rob Roy*, *The Mandarin* and *The Red Feather*. In 1917 a grand opera composed by him, *The Canterbury Pilgrims*, was produced at the Metropolitan Opera House in New York. De Koven has also composed a number of well-known songs remarkable for their sweetness of melody; *O Promise Me* is the most popular. Others include *Margery Daw*, *A Winter Lullaby*, *Indian Love Song* and *Ask What Thou Wilt*. Just before his death he wrote the opera *Rip Van Winkle*.

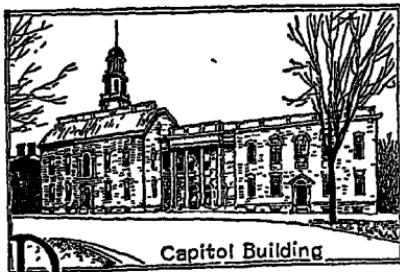
DELACROIX, FERDINAND VICTOR EUGENE (1798-1863), a celebrated French painter, leader of the Romantic school, who excelled in depicting historical scenes. Critics frequently attacked him for his departure from the conventional classic style, but he attained a secure place in art for all time. He traveled widely, and the varied subjects of his pictures gave evidence that he utilized well his contacts. Many of his canvases are in

the Louvre, among them *Algerian Women*, *Jewish Wedding in Morocco*, *Entry of Crusaders into Constantinople*. In New York's Metropolitan Museum are *Abducting Rebecca* and *Christ on Lake Gennesaret*.

DELAND', MARGARETTA WADE CAMPBELL (1857-), one of the foremost American novelists of the modern period. She was born in Allegheny, Pa., and was educated in private schools. She taught drawing in New York until 1880, when she married and removed to Boston. Her first novel, *John Ward, Preacher* (1888), was widely popular. Among her other books are *Old Chester Tales*, *Dr. Lavender's People*, *The Awakening of Helena Richie*, *The Iron Woman*, *The Hands of Esau*, and *The Rising Tide*.

DE LA RAMEE, *de lah rah may'*, LOUISA. See RAMEE, DE LA, LOUISA.

DELAROCHE, *de la rosh'*, PAUL (1797-1856), probably the greatest painter of the French school. He studied landscape painting for a short time, but applied himself afterward to historical painting and rapidly rose to eminence. His subjects are principally taken from French and English history. There is little real feeling or sentiment in his works, but the pictorial effect is present to a high degree. Among his well-known pictures are *Death of Queen Elizabeth*, *Princes in the Tower*, *Joan of Arc* and *Napoleon at Fontainebleau*.



DELAWARE, one of the original thirteen states and the first to ratify the Constitution of the United States. It is next to the smallest state in the Union; its size is nearly twice that of Rhode Island. Delaware is one of the Middle Atlantic group of states. Its northern boundary forms the arc of a circle, determined by a twelve-mile radius from the center of New Castle, to settle a boundary dispute. The Delaware Bay and River and the Atlantic Ocean are on the east; Maryland is on the south and west.

The popular name of the state is the BLUE HEN STATE, and Delaware soldiers in the Revolutionary War were called the "Blue Hen's chickens." The area is 2,370 square miles, of which 405 are water. In 1930 the population was 238,380, an average of 121 to each square mile, as compared with 41 per square mile for the entire country. Only nine of the states have a greater number of people to the square mile. The state ranks forty-seventh in area and forty-sixth in population. The peach blossom is the state flower.

Surface. Except a small, hilly section in the north, the surface is uniformly low and level and is generally sandy. In the extreme south there is much swamp land. The highest elevation is only 440 feet above the sea. The coast of Delaware Bay is marshy, and some of the land is enclosed by dykes and thus rendered tillable. The Atlantic coast has many sand beaches enclosing shallow lagoons. Near the western boundary, a low wooded ridge extends southward from the Christiansa and Brandywine rivers. Cypress Swamp, on the southern border, is twelve miles long and six miles wide. The height of land between Chesapeake and Delaware bays divides the state into two drainage areas. To the west of this divide the rivers flow into the Chesapeake Bay. To the east they flow into the Delaware River, Bay and the Atlantic. The rivers of Delaware, though numerous, are all small.

Climate. The climate is mild and healthful. Autumn is particularly mild, and frosts seldom occur before the middle of October. The mean temperature is about 55°. The average rainfall is about forty-five inches.

Agriculture. Delaware is an agricultural state, notwithstanding it lies in the great industrial belt of the United States. Improved farm lands occupy eighty-five per cent of its entire area, nearly as large a proportion as in any other state. Delaware some years ago seemed to be the natural home of the peach, but apples, small fruits and vegetables are now raised in greater abundance for the great city markets. Delaware's early apple crop is large and is in great demand. Although fruit-growing is the chief industry, tomatoes, cereals, peas, beans and clover seed are also important products. The total value of farm products, at average prices, is about \$15,000,000 per year. Corn and wheat are the most important field crops.

Other Industries. The principal manufacturers of Delaware are located in Wilmington. Here are large leather-tanning factories, passenger-car and fiber factories and plants for the finishing of cotton fabrics. Large ship-building yards, foundries and machine shops are here. Near Wilmington are the great plants of the DuPont de Nemours Company, manufacturers of powder and other explosives, chemicals, lacquer and leather substitutes, and synthetic dyes. Other important industries in the state are canning and preserving work. The mineral resources consist chiefly of clay products, stone, sand and gravel.

The fisheries of Delaware are important. Oysters, menhaden, shad, sea trout and perch are of chief commercial value. Factories derive oil from the menhaden which is of commercial value, both as oil and as fertilizer.

Transportation. Numerous railways bring the coal and iron fields of Pennsylvania within easy reach and render the markets of Philadelphia and New York available. The principal roads are the Baltimore & Ohio, the Pennsylvania and the Philadelphia & Reading. Good harbors at Wilmington, New Castle and Lewes, and the navigable waters of the Delaware River and Bay encourage coastwise and internal trade. The state has over 1200 miles of improved highways.

Government The governor is elected for four years and may be reelected, but is not eligible for a third term. The legislative department consists of a senate of seventeen members and a house of representatives of thirty-five members. The members of the senate are elected for four years and of the house for two years. The judiciary consists of six state judges, one of whom holds the office of chancellor and another that of chief justice. The judges are appointed by the governor for terms of twelve years and confirmed by the Senate.

Progressive legislation in Delaware includes the passage of workmen's compensation acts, the strengthening of child labor laws, and the enactment of a state income tax law with an exemption of \$1000.

Education The state provides for the purchase and use of free text-books in the public schools. Separate schools are provided for white and colored pupils. The principal institution of learning, the Uni-

Items of Interest on Delaware

It lies on the Coastal Plain and is generally level and relatively low, the average elevation above the sea being about fifty feet; in the extreme north the country is rolling, with hills, moderately deep valleys, and rapid streams.

In general the soils of the northern part of the state are clays, sometimes mixed with loams, of the central part mainly loams, and those of the southern part sands.

The annual rainfall averages forty to forty-five inches, but it is slightly greater on the coast than inland.

The forests, which were once extensive, are now of importance chiefly for railway ties and wharf piling.

The shipyards at Wilmington have produced many large ocean steamships.

Oysters and menhaden are the principal product of the state's fishing industry.

The mining industry is inconsiderable, being principally in clay products, stone, sand and gravel.

Fruit-growing is one of Delaware's important industries. There are many canning and preserving factories in the state.

Questions on Delaware

How does Delaware rank in size?

Describe its surface.

What kinds of soil are found?

What minerals are found? In what part of the state?

What is the chief product of the fisheries?

Is the fishing industry important? Why do you think so?

In which section is the land most valuable for agricultural purposes?

What is the total annual value of farm products?

Name the leading crops.

What are the principal manufactures?

How many miles of railway has Delaware?

What industries make Wilmington an industrial center?

versity of Delaware, is located at Newark. A State College for Colored Students is at Dover. Near Middleton is St. Andrews School for Boys, and in Wilmington are excellent private schools, including Friends School and Tower Hill School.

State Institutions. The Associated Charities of Wilmington cooperate in the direction of many philanthropic institutions. These include the Home for Friendless Children, the Home for Aged Women, Saint Joseph's School for Orphan Colored Boys, the Florence Crittenton Home, the Delaware Industrial School for Girls, Home of Merciful Rest, and the Layton Home for Colored Persons, all at Wilmington. There are also several institutions in Dover and Marshalltown, and the Delaware Hospital for the Insane at Farnhurst. The Delaware State Health and Welfare Commission has general charge of the work for the prevention and cure of tuberculosis.

History. Lord Delaware sailed into Delaware Bay in 1611, but no settlement was established until 1631, when the Dutch founded a trading post near the present site of Lewes. This settlement was soon destroyed by the Indians, however, but in 1638 the Swedes built a fort at the present site of Wilmington, which became the first permanent settlement in what is now Delaware. The colony of New Sweden lasted for seventeen years when it was conquered in 1655 by the Dutch under Peter Stuyvesant. The latter were in turn supplanted by the English in 1664. After that it became a bone of contention between rival English claimants, namely, the colonies of Maryland and Pennsylvania, the latter finally gaining control in 1685. In 1701 it was granted a separate assembly, two years later it was reunited to Pennsylvania, but in 1704 was recognized as a separate colony.

During the Revolution, Delaware was loyal to the patriot cause, formed an independent state government in 1776, and was the first to ratify the Federal Constitution (December, 1787). Under the republic it rapidly gained in population and wealth. Though a slave-holding state, it remained faithful to the Union in the Civil War, although it furnished many recruits to the Confederate army. At the close of the struggle, the legislature firmly resisted the passage of the 13th, 14th and 15th amendments.

The Democratic party uniformly con-

trolled the state government from the eighteen fifties to the eighteen nineties. Since the turn of the century the Republican party has consistently been in power with few exceptions. From 1860 to 1892 inclusive Delaware's electoral votes were cast for the Democratic presidential candidates except in 1876, and from 1896 to 1932 the state's electoral votes were cast for Republican presidential candidates except in 1912 when Woodrow Wilson carried the state at his first election.

Related Articles. Consult the following titles for additional information
 Chesapeake Bay Dover
 Delaware, Thomas W Wilmington
 Delaware Bay

DEL'AWARE, a tribe of Indians belonging to the Algonquian family, called by themselves *Lenm-Lenape*, meaning *real men*. They had to leave their original settlements in Eastern Pennsylvania and New Jersey about the middle of the eighteenth century and go farther west. Later they were removed to the Indian Territory. The few hundreds that survive are scattered among various tribes. William Penn made his celebrated treaty with the Delaware, and their famous chief Tamanend gave his name to the political organization in New York known as Tammany.

DELAWARE. OHIO, the county seat of Delaware County, twenty-four miles north of Columbus, on the Olentangy River and on the Cleveland, Cincinnati, Chicago & Saint Louis, the Hocking Valley and the Pennsylvania railroads. The Ohio Wesleyan University, a leading Methodist school, is located here. The city has a Federal building and a public library and contains railroad shops, foundries, flour mills and other manufactories. Population, 1930, 8,675.

DELAWARE, or DE LA WAER, THOMAS WEST, Lord (1577-1618), the first British colonial governor of Virginia colony, in whose honor Delaware River, Delaware Bay and the state of Delaware were named. At the age of twenty-five he became a member of Queen Elizabeth's privy council, and in 1609 of the Council of Virginia in England. In the following year he was sent to Virginia as governor and captain general under the charter of 1608, arriving just as the discouraged colonists were about to embark for England. He displayed ability and energy as an executive and helped firmly to establish the colony on a prosperous basis. In 1611 he

left Virginia for the West Indies in search of health, but was driven by storm into Delaware River. He later returned to England and died while on another voyage to America.

DELAWARE BAY, an arm of the Atlantic Ocean between the states of Delaware and New Jersey. It is about forty miles long, and its greatest width is twenty-five miles. At the entrance, near Cape Henlopen, is situated the Delaware Breakwater, which affords vessels a shelter within the cape. This breakwater was erected by the Federal government and cost about \$3,000,000. See DELAWARE RIVER.

DELAWARE RIVER, a comparatively short but very important commercial waterway of the United States. It rises in the Catskill Mountains in New York, separates Pennsylvania from New York and New Jersey, and New Jersey from Delaware, and loses itself in Delaware Bay. It has a course of about 410 miles and is navigable for large vessels to Philadelphia and for smaller craft to the head of tide water at Trenton. Its chief tributaries are the Schuylkill and the Lehigh.

DELAWARE WATER GAP, a narrow gorge in the Kittatinny Mountains, on the borders of Pennsylvania and New Jersey, through which the Delaware River flows. The mountains on each side rise to a height of 1,400 feet above the water and form very beautiful scenery.

DELCASSE', *del ka say'*, THEOPHILE (1852-1923), a French statesman, prominent in World War politics. For more than twenty years he held conspicuous offices under the government. In 1914 he returned to France from Russia, to which country he had been sent as ambassador in 1913. On the outbreak of the World War he assumed charge of foreign affairs, a post he had previously held, and remained in it until October, 1915, when he resigned. It was Delcassé who was chiefly instrumental in bringing about the friendly understanding among England, France and Russia, which had such important bearings on the war in 1914.

DELFT (formerly Delf), NETHERLANDS, a picturesque town on a canal between Rotterdam and The Hague. Among the buildings are the townhall; the Prinsen-hof, now a museum, the scene of the assassination of William the Silent; the old Reformed church; the new church, containing monuments to

William I and Hugo Grotius and the burial vaults of the present royal family. The town has long been famous for its earthenware, made in imitation of Chinese and Japanese porcelains, and known as Delftware. Following a period of decline, the making of this pottery enjoyed a revival after the opening of the twentieth century. Population, 1933, 51,700.

DELHI, *del'e*, INDIA, capital of the Indian province of the same name, and seat of the British government for all India, so declared when King George visited India in 1911-12 and was crowned Emperor of India at a great durbar held there. It is situated on the Jumna River, about 950 miles from Calcutta, the former capital. The city was first founded by the Emperor Shah Jehan and as the capital of the Mogul Empire in the seventeenth century was one of the most magnificent cities in the world. Remains of its former glory are still evidenced in such fine relics as the Jumna Masjid, the work of Shah Jehan, built of red sandstone and white marble, also the black mosque and the crumbling tombs of the Imperial family, pavilions, baths and mausoleums, covering a vast tract near the site of the present city, and in the imperial palace built by the Great Mogul. This last was partly demolished to make room for military barracks, but the great towers, gilded minarets, ornate pavilions and marble dome still stand.

The present city is flanked on three sides by a stone wall thirty feet high, and within this are many modern buildings, some of them of European architecture. The government college, the Residency and a Protestant church are among the modern architectural features.

Its political prominence has tended to make Delhi a cosmopolitan city, with many European characteristics. Modern civilization has done much to overcome caste prejudice among the inhabitants, thousands of whom are employed in the flour, cotton and sugar mills. Educational opportunities have increased in recent years, and with greater enlightenment has come civic pride and a desire for commercial progress. The political unrest which formerly disturbed the peace of mind of English residents has largely disappeared, and in its place has come a general recognition of the efficiency of the present system of government. Population, 1931, 417,442.

DELILAH, one of the famous women of the Old Testament, the temptress of Samson. She prevailed upon him to reveal to her the source of his strength, which was his long hair, and while he lay asleep she called men who cut off his locks. Then she allowed his enemies, the Philistines, to capture and blind him (see *Judges XVI*). Their story has been effectively presented in dramatic form by Saint-Saens in his opera, *Samson and Delilah*.

DELIRIUM, the condition of being "out of one's head," due to high fever, injury to the head, or to such nervous diseases as epilepsy, Saint Vitus's dance and hysteria. In delirium the speech is disordered and incoherent, the emotions are excited and the power to reason is lost. Usually-familiar faces may not be recognized. In violent attacks of delirium the patient may do himself bodily injury, if not carefully watched. The onset of delirium during an attack of any disease is a very serious symptom. See *DELIRIUM TREMENS*.

DELIRIUM TREMENS, *tre'menz*, an affection of the brain, caused by excessive drinking of alcoholic liquor. The principal symptoms of this disease are delirium and trembling. The delirium is a constant symptom, but the tremor is not always present, or, if present, is not always perceptible. Frequently the sufferer is thrown into paroxysms of terror, by thinking he sees snakes or other animals, or the most frightful and grotesque objects. The treatment of this distressing malady should be supervised by a reliable physician. Usually an attack requires the administration of powerful drugs.

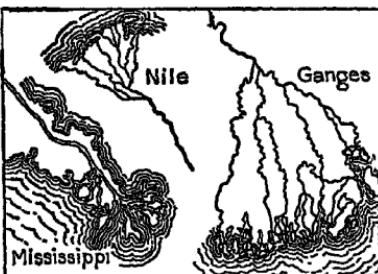
DELOS, an island of great renown among the ancient Greeks, the fabled birthplace of Apollo. It was a center of his worship and the site of a famous oracle (see *ORACLES*). It is the central and the smallest island of the Cyclades group, in the Aegean Sea. Delos is now deserted except for the few who visit it for its ruins.

DELPHI, *del'fī*, a town in ancient Phocis, Greece, originally called Pytho and famous for its oracle. The oracles were delivered by a priestess, who sat on a tripod at the entrance to a cavern, on the slope of Mount Parnassus, from which issued cold vapors, supposed to be the prophetic breath of the god Apollo. The oracular utterances were always obscure and ambiguous; yet they served, in the hands of the priests, to regulate

and uphold the political, civil and religious relations of Greece. Delphi was also one of the meeting places of the Amphictyonic Council of the Greeks (see *AMPHICTYONIC COUNCIL*), and near it were held the Pythian games. See *ORACLES*.

DELSARTE, *del'sahrt'*, FRANÇOIS ALEXANDRE (1811-1871), a musician and investigator, born at Solesmes, France. He composed a few melodies and wrote several romances, and taught singing and declamation. He was best known as the founder of a school of physical culture (which see).

DEL'TA, the name given to low island plains formed at the mouth of a river where the stream separates into two or more branches. The term originated with the Greeks, who first applied it to the plain



THREE GREAT DELTAS

formed by the mouth of the Nile, because of its triangular shape, resembling the Greek letter Δ , called *delta*.

Deltas are caused by the meeting of the river's current with an inflow from the sea, so that the outflowing current is slackened, and most of the salt which it holds in suspension is deposited. If the sea is quiet, this action soon builds up a plain which reaches to the surface. Vegetation takes root from this, and in time it becomes firm land. Deltas will not form where the sea is agitated by strong winds or where tides produce high waves, because these movements wash away the sediment; hence deltas never exist in broad estuaries like the Gulf of Saint Lawrence. The most noted deltas in the world are at the mouths of the Nile, the Mississippi, the Ganges, the Brahmaputra, the Hoang-ho, the Po and the Mackenzie. Some of these are very large, that of the Brahmaputra having an area of 50,000 square miles, and that of the Nile, about 20,000 square miles. The

land of the deltas is usually very fertile, and if of sufficient elevation to drain, it is unusually valuable for agricultural purposes. See RIVER; EROSION.

DELUGE, *del'üe*, the name given to the great flood that covered the earth in the time of Noah, an account of which event is given in chapters six, seven and eight of the book of *Genesis*. According to the Bible narrative, the people of the earth had become so wicked that God sent a deluge which covered "all the high hills that were under the whole heaven" and destroyed all living things except those which previously had entered the Ark built by Noah. Besides Noah and his family, the Ark sheltered one male and one female of every species in the animal kingdom. After 150 days the waters began to subside, and during the seventh month the Ark rested on Mount Ararat. Then Noah sent out a dove to see if the waters had disappeared. When the bird returned for food and shelter he replaced her in the Ark and kept her for seven days. After a second trip the dove returned with an olive leaf, and when she was sent out a third time she returned no more. Then Noah knew that the waters had dried up, and that soon he and his family could return to their homes.

DEMAND AND SUPPLY. See **SUPPLY AND DEMAND**.

DEMARCATION, *de mar'kashun*, LINE OF. Very soon after the discovery of the New World a dispute arose between Spain and Portugal over territorial rights in South America. The matter was referred to Pope Alexander VI for settlement. He drew a line on the map of the Americas running north and south at a distance of 600 miles west of the Azores and Cape Verde Islands. To Spain he assigned all lands west of that line which Spaniards had discovered or might later find, and to Portugal he assigned all lands acquired in like circumstances to the east of that line. The location of the line was later changed by the two nations to 2,220 miles west of the Cape Verde Islands. Thus is explained why Portuguese is today the language of Brazil, and Spanish of all other South American countries. The ownership of the Moluccas and Philippines was settled in a similar way.

DEMENTIA. See **INSANITY**.

DEMETER. See **CERES**.

DE MILLE, CECIL BLOUNT (1881-), an actor, playwright, and since 1913 identi-

fied with the motion-picture industry as producer. His stage success came as a producer of plays for David Belasco, and the genius there displayed he carried to the silent screen and then to the talking pictures. He gave to the public more than fifty pictures, and rose to the top of his profession as president of his own film company. Some of his pictures were massive productions, such as *The Ten Commandments* and *The King of Kings*.

DEMOCRACY, rule by the people. See **GOVERNMENT**.

DEMOCRATIC PARTY, the name given to the party in American history which was the successor of the Republican or Democratic-Republican or Anti-Federalist party, its fundamental doctrine being the application of the most democratic principles to the government. Specifically, it urged the strict construction of the Constitution and the strengthening of the state governments at the expense of the national government. It first came to power in 1801, with the election of Jefferson, and retained control of the national government continuously from that time until 1825, when John Quincy Adams, a former Democrat, but recently converted to the principle of loose construction and centralization, was elected over Andrew Jackson, the Democratic candidate. It returned to power in 1829, with the election of Jackson, was defeated in 1841 by William Henry Harrison, the Whig candidate, and again in 1848 by Taylor, a Whig, owing to a quarrel among New York State Democrats (see **BARNBURNERS**). Thereafter, it was continuously successful until the election of Lincoln in 1860.

The issue of slavery and the Civil War caused a serious division in the party, and it did not again become united until ten years after the war, when, with Samuel J. Tilden as a candidate, the party gained a majority of the popular vote, though Tilden was defeated by the electoral commission (see **ELECTORAL COMMISSION**). In 1884 its candidate, Grover Cleveland, was chosen president, was defeated in 1888 and was again elected in 1892.

From 1896 to 1912 the party was in opposition, but returned to power in 1912 (Wilson, 1913-21), and again in 1932 with the election of Franklin D. Roosevelt. See **POLITICAL PARTIES**.

For a detailed history of the party, its principles and its relations to other parties, see **POLITICAL PARTIES IN THE UNITED STATES**.

DEMOSTHENES, *de mos'the nees* (about 383-322 B. C.), the most eloquent orator of antiquity, perhaps the greatest of all time, and one of the noblest characters in history. His father left him a considerable fortune, of which his guardians attempted to defraud him. At the age of seventeen he conducted a suit against them himself and gained his cause. His success led him to study oratory and, though his lungs were weak, his articulation defective and his gestures awkward, by perseverance he at length surpassed all other orators in power and grace. Against Philip of Macedon, who was attempting to place himself at the head of the Greek states, he directed his famous condemnatory orations known as the *Philippics*.

He was present at the Battle of Chaeronea (338 B. C.), in which the Athenians and Boeotians were defeated by Philip and Greek liberty was crushed. On the accession of Alexander in 336, Demosthenes tried to stir up a general rising against the Macedonians, but Alexander at once adopted measures of extreme severity, and Athens sued for mercy. It was with difficulty that Demosthenes escaped. In 324 he was imprisoned on a false charge of having received a bribe from one of Alexander's generals, but managed to escape. On the death of Alexander in the next year he returned from exile, but when the Greeks were again defeated by the Macedonians he was forced to leave. This time he took refuge in the temple of Poseidon, in the island of Calauria, on the coast of Greece. Here it is believed he poisoned himself to escape the emissaries of Antipater.

DEMURRER, *de mur'er*, a pleading in a case at law which seeks the court's judgment as to (1) whether the facts, even if admitted, are not insufficient to sustain the opposing claim, or (2) whether some other defect in the presentation of the case does not constitute a legal reason why the opposing party should not be allowed to proceed.

DENARIUS, a Roman silver coin, originally worth ten, and later sixteen, of the pieces called *as*, the change being made when the weight of the *as* was reduced, on account of the scarcity of silver. The denarius was equivalent to about fourteen cents of Ameri-



DEMOSTHENES

can and Canadian money. There are also a gold denarius, equal in value to twenty-five silver ones.

DENATURED ALCOHOL. See **ALCOHOL**, subhead *Denatured Alcohol*.

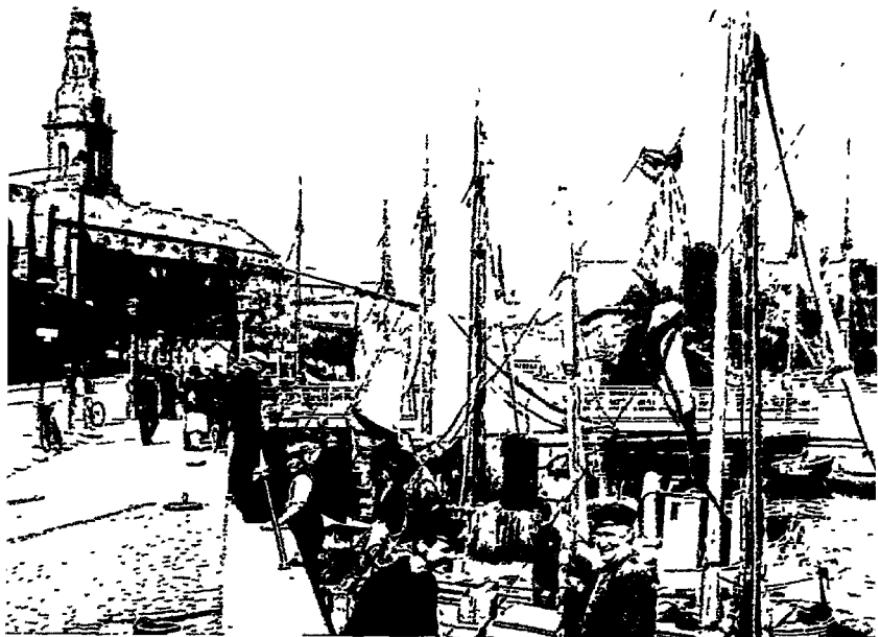
DENISON, TEXAS, a city in Grayson County, seventy-four miles north of Dallas, on the Frisco, the Missouri, Kansas & Texas, the Texas & Pacific, the Southern Pacific, the Kansas, Oklahoma & Gulf railroads and interurban and bus lines. It is an important railroad center in an agricultural country, producing grain, cotton, peanuts, fruits and vegetables, and it contains cotton, cottonseed oil, peanut and flour mills and manufactures of mattresses, machinery, ice and other articles. The important buildings include the Saint Francis Xavier's Academy, a Union depot and a Federal building. There are two hospitals. The town was settled in 1872, was a city in 1891, and has commission government. Population, 1930, 13,850.



A Danish peasant girl

DENMARK, the smallest of the three Scandinavian kingdoms of Europe, the others being Norway and Sweden. It consists of the continental peninsula of Jutland and a number of islands, of which the most important are Funen and Zealand. On the latter is the northern portion of the capital city of Copenhagen; the southern portion occupies the adjacent coast of the small island of Amager. Including the Faroe Islands, north of Scotland, the Danish kingdom has an area of 16,576 square miles, and is more than twice as large as Massachusetts. In 1930 the population of Denmark proper was 3,550,700, about equal to that of the city of Chicago. There are 214 people to the square mile, as compared with about 529 for Massachusetts.

Denmark is a kingdom in the sea, for it has but one land boundary. It is separated from Norway on the north by the Skagerrak; from Great Britain on the west by the North Sea, and from Sweden on the east by the Baltic Sea, the Sound and the Kattegat; Schleswig-Holstein, which became a part of Prussia in 1866, but was originally Danish, lies to the



Evening gallows

IN PICTURESQUE DENMARK

Fishing boats in one of the canals of Copenhagen; here the owners come to market their catch. Old Danish national costumes, now fast disappearing; women in Sunday apparel. Below is a typical flat Danish landscape; a rural scene on a dairy farm.

[See over.]

Keystone





IN THE FISH MARKET, COPENHAGEN

Women are almost exclusively the patient vendors of fish here along the Gammel-strand of the capital city.

[See over.]

south of Jutland on a boundary line less than forty miles in extent. At the close of the World War Denmark entered a claim at the Peace Conference for the return of a portion of Schleswig-Holstein—that portion still Danish in language and sentiment. The northern section, by vote of the people in 1920, again became a part of Denmark.

Surface and Drainage. The west coast of Jutland is low and sandy, while the east coast is level, contains several excellent harbors and is indented with fjords or firths, the most noteworthy being the Lymfjord, or Lumfjord, stretching across Jutland. The inland surface of Denmark is low, generally, though diversified with a range of hills across the middle part of Jutland, the highest points of which are 600 feet above sea. There are no lakes or rivers of note, the largest river being the Guden, which is less than 100 miles long.

Industries. Denmark is the poorest of European countries in mineral resources. Peat is found in the west and north of Jutland, nearly four per cent of the country being in peat bogs, but no metallic ores of any kind appear.

Agriculture is the occupation of over one-third of the people. As the formation of large estates is forbidden by law, the land is divided into numerous small farms, most of which are owned by peasants. About one-third of the land is cultivated, the remainder of the productive area is pasture and meadow land or beech forests. Danish farmers are thrifty and progressive and make extended use of up-to-date machinery. The chief crops are wheat, rye, barley, oats, mixed grain, potatoes and sugar beets. Dairying is carried on extensively and Danish dairy products are among the best in the world. Cooperative marketing is a firm reliance of the farmers. See *COOPERATION*, subhead.

Manufacturing is increasing in importance, though there are no single great enterprises. Porcelain is made extensively in Copenhagen, and other manufactures include locomotives, machinery, wool, linen and cotton. There are also a number of beet-sugar factories. Fishing is an important industry, the country's fishing fleet numbering in 1934 more than 15,700 vessels.

Transportation. Most of the cities are situated on the coast or on navigable rivers. Steamboats run between the islands. The first railroad was opened for use in 1847;

in 1924 there were 3,086 miles in operation, one-half belonging to the state. The exports are mostly animal and dairy products, while the imports include cereals, coal, cotton, iron, manufactures and textiles. Germany, Great Britain, United States, Sweden, Norway and Russia are the leading countries connected with the trade.

Education. Denmark has a good system of education, for education was made compulsory in 1814. The chief institution is the University of Copenhagen, founded in 1479. There are besides, twenty-one agricultural colleges, 303 technical schools, a college of pharmacy, a college of dentistry, and a Royal Academy of Arts.

Government and Religion. In government Denmark is a constitutional monarchy. The present constitution dates from 1915, by it the executive power is vested in the king, and the legislative power lies in the king and a diet, or *Rigsdag*, consisting of the *Landsting*, or upper house, and the *Folketing*, or popular chamber. The former is composed of seventy-two members, twelve of whom are appointed by the king and the rest chosen for eight years by the people. The *Folketing* is composed of 149 deputies, elected by both male and female suffrage for a period of three years. All money bills must be submitted by the government first to this body. The established religion is Lutheran, but toleration is extended to all creeds.

Colonies. Denmark's colonies are not of first importance. Iceland in 1918 was made practically independent, Greenland has a large area, but is habitable only in the lower coast region, the Danish West Indies were sold to the United States in 1917. There remain to Denmark the Faroe Islands (540 square miles and 24,200 people), which form a department in the government.

Language and Literature. The Danish language belongs to the Scandinavian branch of the Teutonic family of languages and is closely allied to the Swedish and Norwegian. It is the most modern of the Scandinavian languages, soft and rather monotonous, with shades of sound difficult for a foreigner to acquire. It is written either in the German or the Roman characters. From the long union of Norway with Denmark, Danish became the written language of the Norwegians and is still to a large extent the language of the educated classes.

The oldest Danish book is a treatise on medicine, which dates from the first half of the thirteenth century. The first really literary writings were series of ballads, which were probably composed between the fourteenth and sixteenth centuries. During the Reformation period, Christian Pedersen (1480-1554) did for the Danish language what Luther did for the German, by publishing a translation of the New Testament and the Psalter, and later, the complete Bible. Modern Danish literature begins with the period succeeding the Reformation, with hymns, scriptural dramas and moral tales. A new effort began with Ludvig Holberg (1684-1754), who infused new spirit into all branches of Danish intellectual life. He was also the founder of the Danish stage. Contemporary with him was the lyric and dramatic poet Johannes Ewald. Heiberg, critic, poet and dramatist, and Jens Baggesen (1764-1826), are the chief comic dramatists of the nation. Fresh life was again infused into Danish poetry by Adam Oehlenschläger (1779-1850), contemporary with whom was Adolph Wilhelm Schack von Staffeldt, a lyric poet of high order. The greatest names in Danish literature since Oehlenschläger have been Hans Andersen (1805-1875), who won world-wide reputation by his fairy tales; Paludan-Müller (1809-1876), and Georg Brandes (1842-1927), critic and literary historian. It was Brandes who, more than any other one man, introduced into Danish thought modern European ideals.

History. After the decline of the Roman Empire, the peoples of the Scandinavian countries began to make themselves felt throughout Europe by reason of their warlike and adventurous spirit. They conquered Normandy, successfully invaded England in the ninth century and even sent voyagers as far as America. Early in the eleventh century, Canute, king of Denmark, established a firm hold on England. He was one of the most powerful rulers of his age, and it was during his rule that Christianity was firmly established in Denmark. For three centuries following Canute, Denmark was in a state of upheaval and, although there was an occasional strong and even brilliant ruler who brought the country to something like the position it had had in Canute's time, most of the kings were weak.

Margaret, called the "Semiramis of the

North," ruled in Denmark from 1375 to 1412, and she gave the country a strong government. By the Union of Kalmar, in 1397, Denmark, Norway and Sweden were united under one sovereign, and Margaret's nephew, Eric, was appointed her heir. He proved, however, to have none of her great qualities, and he speedily lost his triple kingdom, each country choosing its own ruler. By 1448 the Danes, tired of the misrule, chose, as king, Christian of Oldenburg, who established the line which reigned until 1863. The choice of Christian as ruler, also, of Schleswig and Holstein, and the fact that the ruler of Holstein, which was a part of the Holy Roman Empire, had a voice in the German Diet, led centuries later to the most important consequences.

During the reign of Christian II (1513-1523), Sweden, under Gustavus Vasa, gained its freedom, and it was never again united to Denmark. The latter country during the sixteenth century began to have a part in European affairs, and Christian IV (1588-1648) took an important part in the Thirty Years' War. The choice of the king of Denmark was by election until 1660, but in that year the king, Frederick III, succeeded in having the kingship declared hereditary in his family.

As an ally of Napoleon, Denmark was involved in war with Sweden, England, Russia and Prussia. Copenhagen was bombarded by the British fleet in 1807, and seven years later Norway was ceded to Sweden. Holstein, feeling itself to be entirely German, had never been satisfied with the Danish rule, and when in 1848 the Danish king declared his intention of making the Danish monarchy permanently indivisible, a rebellion broke out in Schleswig and Holstein among the German element. It was put down by 1851, though it was supported by Germany. Christian VIII had in the meantime granted to Denmark an extremely liberal constitution, but this did not allay the discontent of the German element of Schleswig-Holstein, and when in 1863 Prince Christian of Gluecksburg came to the throne as Christian IX, Schleswig and Holstein declared for a different ruler. Prussia and Austria determined to unite in settling the Schleswig-Holstein matter, and war was begun with Denmark in 1864. As a result Denmark was forced to resign all claims to Schleswig and Holstein, and two years later the duchies passed finally under the control

